

HELLE KAASIK

Sacred medicine from the forest:
chemical, psychological
and spiritual aspects of ayahuasca



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LIST OF ORIGINAL ARTICLES

- I. **Chemical Composition of Traditional and Analog Ayahuasca.** Kaasik, H., Souza, R. C. Z., Zandonadi, F. S., Tófoli, L. F., & Sussulini, A. (2021). Chemical composition of traditional and analog ayahuasca. *Journal of Psychoactive Drugs*, 53(1), 65–75.
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- II. **Ayahuasca Users in Estonia: Ceremonial Practices, Subjective Long-Term Effects, Mental Health, and Quality of Life.** Kaasik, H., & Kreegipuu, K. (2020). Ayahuasca users in Estonia: ceremonial practices, subjective long-term effects, mental health, and quality of life. *Journal of Psychoactive Drugs*, 52(3), 255–263.
<http://doi.org/10.1080/02791072.2020.1748773>
- III. **Ayahuasca rituaalne kasutamine Eestis [Ritual use of ayahuasca in Estonia].** Kaasik, H. (2019). Ayahuasca rituaalne kasutamine Eestis. *Usuteaduslik Ajakiri*, 75(2), 118–146.
- IV. **Enteogeenne esoteerika ayahuasca kasutajate kogukonnas [Entheogenic esotericism in the community of ayahuasca users].** Kaasik, H., & Altnurme, L. (2021). Enteogeenne esoteerika ayahuasca kasutajate kogukonnas [Entheogenic esotericism in the community of ayahuasca users]. In: *Mitut usku Eesti V. Esoteerika* (pp. 135–160). Tartu: Tartu Ülikooli Kirjastus.

INTRODUCTION

Ayahuasca is a psychoactive plant brew traditionally used for healing and divination in Amazonia, and as a sacrament in syncretic Brazilian religions (MacRae, 1992; Frenopoulo, 2005; Rios & Grob, 2005b; Dawson, 2013b; Barnard, 2014; Dawson, 2017) (see Figure 1). Over the last few decades, the ritual use of ayahuasca has been spreading worldwide to reach countries with different spiritual traditions and histories (Labate & Jungaberle, 2011; Labate et al., 2017; Assis & Labate, 2017; Labate & Cavnar, 2018).

Ayahuasca rituals are held in many European countries, including Estonia (Kaasik, 2019; Kaasik & Kreegipuu, 2020). Based on data from my interviews and observations, I would estimate that there are around five thousand people who have used ayahuasca in Estonia (a small country with a population of about 1.3 million).

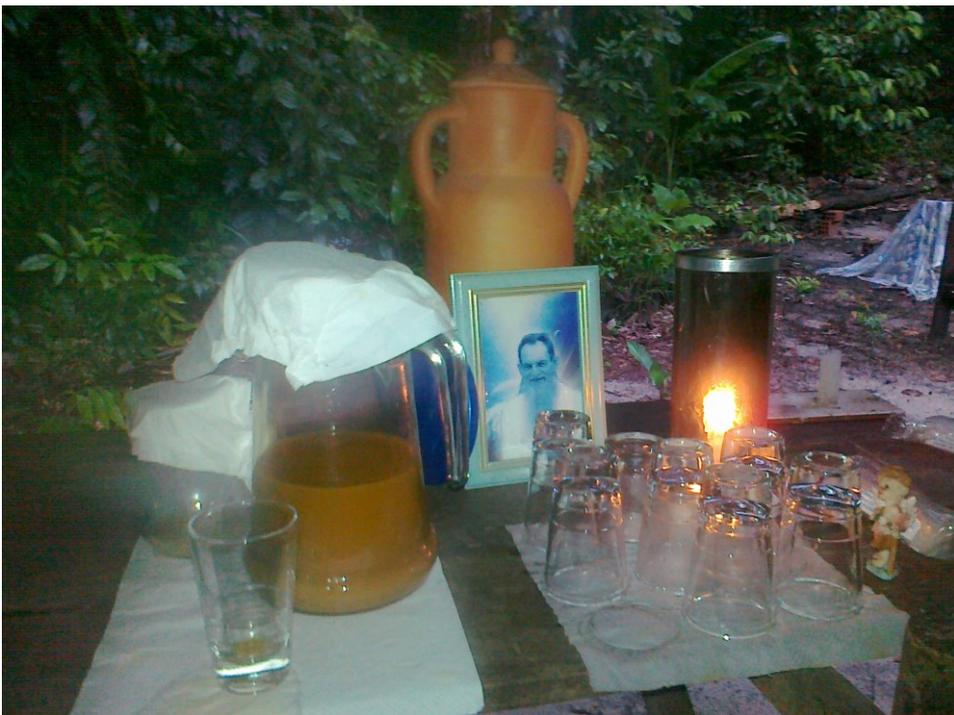


Figure 1. The sacred brew on the altar of a forest church in Brazilian Amazonia.

Academic studies of ayahuasca use have explored biochemical, pharmacological, psychological and neuroscientific aspects of ayahuasca (Callaway, 1999; Riba et al., 2001; Bouso et al., 2012; Jiménez-Garrido et al., 2020; Santos & Hallak, 2021). Cultural studies of practices, and experiences and beliefs of participants are challenged by structural differences of neoshamanic practices from religions in the traditional sense (Hanegraaff, 2011). Nevertheless, cultural studies have followed the popularization of ayahuasca (Rios & Grob, 2005a; Schmid et al., 2010; Lowell & Adams, 2017; Apud & Romani, 2017; Rodd, 2018; Antunes, 2019). As in many other areas of cultural and religious studies, research about ritual use of ayahuasca is to a significant extent conducted by the participants of these practices themselves.

This thesis consists of four articles (Kaasik et al., 2021; Kaasik & Kreegipuu, 2020; Kaasik, 2019; Kaasik & Altnurme, 2021)¹ and an introductory article, which together address the research area – the ritual use of ayahuasca – in an interdisciplinary way. The topic is explored from a variety of viewpoints. Article I (Kaasik et al., 2021) is devoted to analysing the brew for bio- and psychoactive substances and comparing the chemical composition of the brew between different traditions of use. Article II (Kaasik & Kreegipuu, 2020) and Article III (Kaasik, 2019) describe ceremonial practices, spiritual background and psychology (mental health, personality and quality of life) of users. Article III also places ayahuasca use in Estonia into the context of neoshamanism and new spirituality. Article IV (Kaasik & Altnurme, 2021) explores spiritual experiences at ayahuasca rituals, and social aspects of the practice and beliefs shared in user communities. As such, this study clarifies the position of ayahuasca use in contemporary society where the research was conducted. This summarising review article presents the common background for the published articles. It uses the method of auto-ethnography to “connect the autobiographical and personal to the cultural, social, and political” (Ellis & Adams, 2014, p. 254) while presenting an insider’s view of the experience of initiating and conducting the study.

Unlike the use of most other psychoactive plants introduced into “western” (i.e. European and North American) culture from other parts of the world (e.g. tobacco, coffee, tea, cocoa, coca, cannabis, etc.), contemporary modes of ayahuasca use in Europe have retained a significant part of their traditional ritual form and sacred status among users (Shepard, 2017, p. xvi). Neoshamanic ayahuasca rituals, which freely combine features from different indigenous traditions with contemporary innovations, have converged into a recently established diverse tradition. This established ritual format of neoshamanic ayahuasca ceremony has started to inspire and shape ceremonial use of other natural psychoactives (e.g. tea, cocoa, tobacco, psychoactive mushrooms, etc.) that are already in secular use, and elevate their status for the participants from profane to sacral. Ayahuasca has a revered, spiritual and divine character for communities of

¹ Despite not being in chronological order due to delays in publication, my articles are intended to be read in the order presented in brackets (i.e. Article I corresponds to Kaasik et al., 2021; Article II corresponds to (Kaasik & Kreegipuu, 2020), etc.

Brazilian syncretistic ayahuasca religions (*Santo Daime*, *União do Vegetal*, *Barquinha*) and retains a significant part of this sacredness to the participants of neoshamanic ceremonies. This reverential attitude appears also among facilitators that offer ayahuasca ceremonies to tourists on a commercial basis as health and wellness services as well as those tourists who participate in these ceremonies. In religious and neoshamanic use, the spiritual dimension may become amplified in comparison to certain traditional indigenous uses for healing, problem solving and celebration. An ayahuasca session is not just the use of a substance, it is a dedicated and structured ritual conducted by an experienced and competent leader (“shaman”, *paje*, *ayahuasquero*, *taita*, *padrinho/madrinha*, *mestre* etc). The aim of the ritual is to support the participants in receiving personal spiritual experiences for their healing and spiritual development. Therefore, the contemporary use of ayahuasca is a spiritual phenomenon and, as such, a legitimate subject of cultural and religious studies.

The Amazonian plants used to produce ayahuasca are traditionally and most often *Banisteriopsis caapi* (*jagube*, *mariri*, *cipó*, *caapi*...) and *Psychotria viridis* (*chacrana*, *chacrona*, *rainha*...) (see Figure 2). The stems of *B. caapi* and the leaves of *P. viridis* are used for its preparation. In the Colombian version of the brew, called *yagé*, the leaves of *Diplopterys cabrerana* are used instead of those of *Psychotria viridis*. Two botanical varieties of *B. caapi* are known: *caupuri* (with knotty stems, mostly Amazonian) and *tucunaca* (with smooth stems, grows also in cooler climates). Both varieties are used for the brew. Indigenous users distinguish more varieties of the vine (see Figure 3) and they know their specific uses.



Figure 2. Plants traditionally used to prepare ayahuasca: tropical vine *Banisteriopsis caapi* (left) and shrub *Psychotria viridis* (right).



Figure 3. Varieties of vines from Peru, sold over the Internet as handicraft material made of *Banisteriopsis caapi*. Different varieties are recognizable. Sample 14 displays a characteristic cross-section pattern of another species, *clavohuasca* (*Tynanthus panurensis*). These vines are chemically treated for phytosanitary purposes and are not suitable for human consumption.

The combination of plant alkaloids found in ayahuasca (including harmine, tetrahydroharmine and harmaline from *B. caapi* and N,N-dimethyltryptamine (DMT) from *P. viridis*) within a certain range of proportions has a synergistic biochemical effect in the human body. These biochemical changes, including activation of serotonin receptors of subtype 2A in the brain (characteristic of all classical psychedelics (Nichols, 2016)), elicit a rich variety of altered states of consciousness and increase receptiveness to spiritual experiences in participants of the ritual. The participants usually consider these experiences and their long-term after effects as cleansing, healing and guiding as well as conducive to spiritual development and to beneficial changes in their lifestyle, worldview, and relationships (Apud, 2017; Kaasik & Kreegipuu, 2020).

The International Center for Ethnobotanical Education, Research and Service (ICEERS) concluded in its 2021 technical report that “both the scientific literature existing to date on acute and long-term effects of ayahuasca and the studies in which ayahuasca has been used as a therapeutic tool in psychiatric population, show that the decoction or admixture is physiologically and psychologically safe

and, additionally, that it has interesting therapeutic potentials.” (Bouso et al., 2021, p. 11). Ayahuasca has been found to have potential in the treatment of depression (Santos et al., 2016; Palhano-Fontes et al., 2019), psychological trauma (Inserra, 2018; Perkins & Sarris, 2021) and addictions (Nunes et al., 2016; Rush et al., 2021). It has also been used in neuroscience to study complex cognitive processes (Prado et al., 2009; Araujo et al., 2012; Domínguez-Clavé et al., 2016; Santos & Hallak, 2021). However, ayahuasca is a powerful psychoactive substance and there are risks, contraindications and controversies related to ayahuasca use (Rios & Rumrill, 2008; Santos & Strassman, 2011; Santos et al., 2017). These risks may lead to harm, and especially if the brew is used by inexperienced people without competent and responsible supervision. Therefore, competent and responsible facilitation as well as individual awareness, preparation and reasonable caution are needed in such practices to avoid and mitigate these risks (Tupper, 2008; Londoño et al., 2019).

The main aim of my PhD dissertation is to obtain a better understanding of the phenomenon of ayahuasca use in order to enhance societal discussion about entheogens and the cultures that use them. This better understanding about ayahuasca may add value to the current discussion and benefit society in three main ways. Firstly, it may help to develop reasonable regulation of ayahuasca and other entheogens in society. Secondly, it may help to reduce the risks of ayahuasca use. Thirdly, it may empower safe application of the therapeutic potential of ayahuasca, as well as its potential to support personal and spiritual development. Furthermore, raising these questions will also enable us to perceive our own allegedly rational organization of society from a different perspective as well as to recognize and critically explore our own culturally conditioned beliefs, taboos and prejudices.

At the start of my doctoral journey, I had many research questions about ayahuasca. What is ayahuasca? Who uses ayahuasca, why and how is it used? What are the psychological and spiritual effects of participation in ayahuasca rituals, both in the short term and long term, and at the level of the individual, the user community and the society? What is the meaning of ayahuasca practices in the life of the user, their community and the society?

The published articles that form the main part of this thesis (articles I–IV) address these research questions. These articles are pieces of knowledge captured from positions where my research interests met the interests, acceptance and support of the two tribes to which I belong – the academic community and the ayahuasca community. These seemingly different pieces of formalized knowledge evolved as different projections of the same quest for wisdom around the phenomenon of ayahuasca in the lived reality where all useful theory is bound to practice by both its roots and its fruits. This lived reality of my ongoing spiritual journey that started to revolve around ayahuasca more than ten years ago (in 2011) existed and continues to exist also in between, and beyond these static published articles, as a wholesome and continuous dynamic landscape. This landscape has been reflected in this summarising review article as background to these published studies.

My summarising review article is structured as five Chapters as follows. Chapter 1 explains the formation of the research topic. Chapter 2 describes the aims and methods of my study. Chapter 3 outlines my position as the researcher. Chapter 4 summarises the results of the work (including the results published so far only in Estonian), clarifies the limitations of the study and specifies my contributions to the articles published with co-authors. Chapter 4 also discusses ongoing perspectives and suggests areas for future research. Chapter 5 gives a critical overview of the position of ayahuasca in society and summarises the conclusions of this study for the ongoing discussion about the reasonable regulation of ayahuasca use.

1. Formation of the topic

For everything created by God is good, and nothing is to be rejected, provided it is received with thanksgiving; for it is sanctified by God's word and by prayer.

1 Tim.4: 4–5 (New Revised Standard Version)

My studies of ayahuasca were introduced into the Estonian formal academic environment by my Master's thesis on the psychology of ayahuasca users (Kaasik, 2016). In 2014, at the start of my studies, the topic was already being carried forth by the powerful tide of the psychedelic renaissance (Richert, 2019) in the international academic environment. The chemical composition of ayahuasca had been studied (Callaway, 2005), its acute effects and tolerability had been clarified in clinical experiments (Riba et al., 2001; Riba & Barbanoj, 2005; Domínguez-Clavé et al., 2019), its long-term traditional use had been examined by neuropsychological studies (Silveira et al., 2005; Bouso & Riba, 2011; Bouso et al., 2012) and anthropological fieldwork (Labate, 2011), and its therapeutic potential for depression and addictions had been examined (Anderson, 2012; Liester & Prickett, 2012; Thomas et al., 2013). A number of studies about Brazilian syncretic churches that use ayahuasca as their sacrament had been published (MacRae, 1992; Frenopoulo, 2005; Rios & Grob, 2005b; Dawson, 2013b). Challenges and controversies of the internationalization of ayahuasca were already under discussion (Balzer, 2005; Rios & Rumrill, 2008; Labate & Jungaberle, 2011). This discussion considered the spread and change of these spiritual traditions as they were entering new cultural contexts. It also examined the relationships of risks and therapeutic potentials with the cultural and ritual environment of ayahuasca use. Legal cases further brought attention to the definition and regulation of religious and spiritual behaviour in society. As another thread of discussion, controversies of the commercialization, appropriation and misrepresentation of indigenous traditions were raised by critical researchers.

The study of ayahuasca was also starting to emerge in the Estonian academic environment. Two Bachelor's theses (Reha, 2011; Sats, 2012) and one Master's thesis (Reinfeldt, 2011) on the topic of entheogens (including ayahuasca) had been defended. Reha's (2011, pp. 40–42) thesis also included an interview with an ayahuasca shaman known to practice in Estonia (Raitar, 2013).

What was particularly interesting for me was to learn more about the lived reality of the people who participated in ayahuasca rituals in my own, Estonian society. More specifically, I wanted to know (i) who these people are, (ii) why they use ayahuasca, (iii) how they use ayahuasca, (iv) what are the effects of ayahuasca on their mental health, personality and quality of life, and (v) how these users perceive their practice and its (actual and desired) position in the society?

More than a century ago, almost a century before the beginning of the global war on certain psychoactive drugs (e.g. cannabis and LSD) and the global proliferation of prescribed consumption of others (e.g. fluoxetine and diazepam), the

university town of Tartu (then called Dorpat) was one of the birthplaces and a world leader in the field of psychopharmacology due to the classic works of Professor Emil Kraepelin (1856–1926). In the late 1880s and in the early 1890s, his pioneering experiments on the psychological effects of several psychoactive substances, including several self-experiments (Müller-Sedgwick et al., 2006, pp. 133–134), were performed in the very same building that housed the Institute of Psychology of the University of Tartu where I studied.

Over time, the wide variety of psychoactive substances has been classified into three main cultural categories: (i) “*recreational substances*”, (ii) “*pharmaceuticals*”, and (iii) “*controlled substances*”. Recreational substances are represented mostly by alcohol and tobacco, pharmaceuticals are substances prescribed by psychiatrists for mental health patients, and so-called controlled substances are an ever-growing list of heavily regulated substances that are believed to endanger public health. It is challenging to research those who use controlled substances (e.g. ayahuasca users) due to both its social stigma and possible legal consequences.

At the start of my studies (Kaasik et al., 2021; Kaasik & Kreegipuu, 2020; Kaasik, 2019; Kaasik & Altnurme, 2021), and in contrast to the ongoing international “psychedelic renaissance”, there was no active research into ayahuasca in the Estonian academic environment despite the known presence of ayahuasca in local practices and in public media (Raitar, 2013; Veskioja, 2014). The topic was perceived as controversial as it was surrounded by prejudice and fear of legal persecution. It seemed that I would have little hope of survival as a professional scholar. These controversies meant that there were no active workgroups to join. It was also very challenging to find supervisors, resources and co-workers for the study.

Whilst preparing for my studies into ayahuasca, it was strange that no-one had even raised the question of why the use and effects of psychedelics as an important class of powerful psychoactive substances had remained virtually unstudied in a place of such great traditions of psychopharmacology. Perhaps this subject (and the lack of raising this subject) had been scarcely studied because it made researchers “*uncomfortable*”. Further insight into this “*peculiarity*” can be found by Wouter Hanegraaff where he aptly describes the prevalent academic reaction to topics belonging to the area of Western esotericism before his groundbreaking studies in the area: *hic sunt dracones* (Hanegraaff, 2012, pp. 1–4):

My interest in this domain seemed to make my teachers uncomfortable, and to my repeated requests for information and suggestions, they responded by tossing the embarrassing topic on to another colleague as if it were a hot potato. Nobody seemed willing to touch it, and it did not take me very long to decide that if this were the case, then somebody had to do it.
(Hanegraaff, 2012, p. 2)

This passage strongly reminded me of my attempts to plant ayahuasca research into the local academic field. My fear of the imaginary “dragons” (who seemed to carry the equipment of law enforcement) was no less than that of my teachers

and superiors. However, I had also less to lose – and more to win. I perceived large and clear discrepancies between (i) mainstream popular beliefs and official rhetoric about psychedelics, (ii) the scientific knowledge about them, and (iii) experience-based knowledge and beliefs in user circles. Those tensions, the “differences of potentials” between these views from different standpoints initiated the “current” of inquiry. I was determined to seek the truth about this situation as much as practically possible to ensure that I took the best possible care of myself on this path as well as making the findings available to all other interested parties for our common benefit. This resulted in my ongoing attempt to grow this “exotic plant” (i.e. research about ayahuasca) in the local academic field. Within this thesis, I offer the fruits of this research to the readers.

An important step on this path was the successful defence, in 2016, of my Master’s thesis on the psychology of ayahuasca users. In retrospect this can also be perceived as a social experiment on the feasibility of psychedelic research in the local academic environment. After attaining my Master’s degree, I was certain that I wanted to continue bringing suitable parts of my quest for plant-aided healing and wisdom into the academic world. In retrospect, the outward resistance I actually encountered during my studies was less persistent and by far less malevolent than I had expected. Courage, objective attitude and impartiality of both my supervisors inspired and encouraged me greatly. In addition, my understandings from surfing the rising wave of psychedelic-related publications in reputable academic sources (Richert, 2019), participation in thematic conferences and my contacts with internationally recognized researchers of the topic helped to assure me that it is indeed a viable topic of research where I will also have a good chance of retaining my freedom and sanity whilst pursuing this topic.

With my beloved research topic, I continued to seek refuge at the same *alma mater* to which I had been continuously bound by my studies and work from the age of seventeen. The first half of my path consisted of exploring the material world by the methods of theoretical physics. This equipped me with a solid methodological basis to explore natural phenomena as well as having the skills of mathematical modelling and quantitative data analysis. It also firmly convinced me that the vast majority of the existing world that cannot be directly perceived by human senses, however strange and alien, is nevertheless guided by comprehensible laws and accessible to systematic rational inquiry. It showed me that there exists a long and complicated path over the gap between how things are and how they seem to be. This path can be traversed in both ways, from the observable phenomena to our best theoretical understanding and back from the theory to practical applications. Practical applications of our theories about the physical world have manifested the technological abundance that surrounds us. However, I also understood how this technological abundance is incapable of solving major problems of humanity such as violence, poverty and the destruction of nature. This abundance can even contribute to increasing human suffering and threatening human existence itself on this planet. Studies of psychology, motivated by an interest in consciousness and human potential, gave me an understanding of how to study human behaviour and experience. Psychology also equipped me with

self-reflective knowledge about the human mind as an imperfect but usable instrument of scientific study, as well as an extremely interesting object of it.

The possibility to continue my research at the School of Theology and Religious Studies of the University of Tartu was a blessing. The School is known for encouraging academic freedom and openness towards extraordinary topics of research (see e.g. the doctoral thesis of the current leader of the School, Roland Karo (Karo, 2009)), the defence of which was described as a “triumph of academic freedom in the University of Tartu” (Pikkur, 2009). The qualitative methods I learned there allowed me to retain a good part of the richness and “liveliness” of the original data. These qualitative methods (specifically, categorization and qualitative content analysis) were used together with the more standardized quantitative methods of psychology, resulting in a mixed-methods approach that enabled me to achieve a multidimensional understanding of the phenomenon of ayahuasca use.

2. Aims and methods of study

The main aims of the studies and the corresponding methodological means to achieve these aims are classified under the following three interrelated research themes: (i) the chemical composition of ayahuasca, (ii) the psychology of ayahuasca users, and (iii) spiritual experiences enabled by ayahuasca. In the following part of the chapter, I describe the aims and methods of my study in the aforementioned order.

- 1) To clarify the observed variability of the effects of ayahuasca by understanding the material substance of ayahuasca in its variability through determining its chemical composition (Article I). This aim was approached by identifying bio- and psychoactive components of ayahuasca used in different locations and traditions (Kaasik et al., 2021), measuring their concentrations in the samples of the brew and looking for meaningful patterns (e.g. differences of the chemical compositions in brews used in different traditions, correlations between concentrations of analytes as well as relationships between traditional classification of the brews and the concentrations of bio- and psychoactive analytes) in the results.
- 2) To describe the psychology of ayahuasca users in Estonia and compare their mental health and quality of life to those of non-users (Kaasik & Kreegipuu, 2020). In addition, the subordinate aims of this part of the thesis are to describe ritual practices of ayahuasca use, motivations for ayahuasca use, use-related experiences, and subjective consequences of use (Kaasik, 2019). These aims were achieved by using standardized psychometric tests and questionnaires to study 30 ayahuasca users in comparison to 30 control participants who were matched with the users by gender, age and education. The collected psychometric data were processed statistically and open-ended answers were thematically grouped into categories.
- 3) To clarify the variety, role and meaning of ayahuasca-induced spiritual experiences in the lives of individual users, the user community and in society (Kaasik & Altnurme, 2021). This part of the study was based on 60 comprehensive semi-structured interviews with ayahuasca users about their experience and relationship with ayahuasca, and followed by qualitative content analysis of the collected material.

These aims, stated as such in the published articles, followed from the overarching task to understand the use of ayahuasca as a multidimensional phenomenon in its material, psychological, spiritual and social aspects. Developing such an understanding about these properties of ayahuasca may offer useful insights to both the academic community and the user community, and this will enhance their mutual trust and further collaboration. The knowledge obtained through my PhD thesis can be used to facilitate reasonable, open and responsible academic and political discussion about the position and sensible regulation of entheogenic spiritual practices in the society.

3. Positioning the researcher

*For everyone who asks receives, and everyone who searches finds,
and for everyone who knocks, the door will be opened.
Mt.7:8 (New Revised Standard Version)*

Reflectivity and subjectivity of the researcher, the balance between participation and observation in the “participant observer oxymoron” (O’Reilly, 2009, pp. 89, 157–162) and ‘emic’ vs ‘etic’ position of the researcher (Headland, 1990) have been discussed among researchers and methodologists for a long time. The risks of ‘going native’ have been extensively discussed in the literature. Although earlier warnings about “going native” have been partially dismissed as the rhetoric of colonialism, the question about the proper level of rapport with the participants remains significant (O’Reilly, 2009, pp. 87–92). In ‘insider ethnography’ (O’Reilly, 2009, pp. 109–118) when studying one’s own culture, the researcher is already ‘native’ before the onset of the research. In other words, to be native to a culture means to have actually grown up in that culture. Growing up in a European ayahuasca culture is highly unlikely due to its relatively recent origin. As such, it is not likely for a researcher of European ayahuasca culture to be ‘truly native’. Therefore, I am more “native” to European ayahuasca culture than the majority of researchers of this topic, and even more “native” than some less experienced participants of my study.

Personal experience may affect how researchers pose their research questions and how they communicate their results in public (Anderson, 2011). An interesting study discussing the role of personal experience of the ayahuasca researcher in an historical context was published by Tupper and Labate, who asked rhetorically “who is in a more advantageous epistemic position: the astronomer who looks through a telescope, or the one who does not?” (Tupper & Labate, 2014, pp. 76–78)

William James, recognized as the founder of psychology of religion, wrote in his classic work “The Varieties of Religious Experience” (James, 2014, pp. 387–388):

Some years ago I myself made some observations on this aspect of nitrous oxide intoxication, and reported them in print. One conclusion was forced upon my mind at that time, and my impression of its truth has ever since remained unshaken. It is that our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted from it by the filmiest of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus, and at a touch they are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded.

Scholars interested in altered states of consciousness very often cite this paragraph of the book. However, they almost always omit the first two sentences of the passage above that refer to his observations of self-experiments with a psychoactive substance.

To clarify my position in relation to the topic of the thesis, I must briefly describe how I established my relationship with the ritual use of ayahuasca and, more generally, with altered states of consciousness and religious experience. I narrate my experiences from within the methodical frameworks of autoethnography starting from when I was a curious teenager growing up in Soviet-occupied Estonia. For my narration, I utilise the principles of “using personal experience”, “using insider knowledge” and “breaking silence” (Ellis & Adams, 2014, pp. 260–263). Within the framework of these three principles, I employ critical ethnography where I openly evaluate the findings and suggest areas that need change (instead of pretending to be an emotionless objective observer). I follow the autoethnographic method as described by Ellis & Adams (2014, p. 261) as expressed in the quotation below:

Although the telling of stories itself can be a critical act in that description can generate knowledge and knowledge can be powerful, critical ethnographers explicitly work toward cultural change (Ellis & Adams, 2014, p. 261).

When I was a teenager, it was challenging to learn about religion. Estonia at the end of the 1980’s lived under the late-Soviet official atheistic stance that effectively banned religion from education and the public sphere. Religion was not directly outlawed (except for certain movements such as Pentecostals). However, the faculty of theology at the University of Tartu had been closed by Soviet authorities already in 1940, and the only way to learn about religion there was to study “scientific atheism”. The Bible was not available in bookshops, but it was not forbidden to have or read it (which I did at my friend’s place whose parents had it). As another example of how the authorities frowned upon religion, we had to attend school over the Christian festival of Christmas. Sometimes we were specifically ordered to go to school on the evening of December 24, for no other reason than to check that we did not go to Church. The result of that order was that we met at school as ordered and then went to Church together. We did this not out of a religious sentiment (which due to our upbringing was alien for most of us), but out of sheer protest and curiosity. However, the atheistic stance was just beginning to crack, and it was becoming easier to access literature about religious studies.

My special interest in religion and spirituality was enhanced by reading literature about religious and mystical experiences. I was particularly touched by “The Varieties of Religious Experience” by William James (James, 2014), the works of Evelyn Underhill, Marghanita Laski, Eduard Tenmann, Aldous Huxley and Uku Masing. I felt how the very existence of such literature excused my “strange” interest towards these topics which at this time were seen as not only

extraordinary but outright suspicious. I found interesting information about religion even in writings presented under the label of “scientific atheism”. This label was sometimes used to shield from the authorities what we can now openly call religious studies.

On the topic of mysticism, James (2014) was the spark that triggered my own unique spiritual journey through his admission of lacking natural gifts for mysticism.

Whether my treatment of mystical states will shed more light or darkness, I do not know, for my own constitution shuts me out from their enjoyment almost entirely, and I can speak of them only at second hand (James, 2014, p. 379).

Similarly to James, I found myself also lacking natural gifts for mysticism. However, I was determined to find out if the experiences described in many fascinating religious texts and scholarly works that inspired me, i.e. the experiences of “healthy and positive states such as religious awe and mystical ecstasy” (Karo, 2009, p. 111), were real and at least to some extent achievable for an ordinary, non-gifted human of weak or missing faith. This became my personal research question; an obsession that kept me digging in libraries, and later, as a student of physics, sneaking into lectures on the psychology of religion. This personal research question resulted in my experimentation of many activities of different level of reasonability. I visited several churches and charismatic groups in hope that they somehow make it work for me as well. I got myself baptized in a charismatic evangelic group, I did a parachute jump, I participated in drumming circles, meditation and tai-chi. I swallowed some synthetic molecules and some hooks of the emerging new-age market during the 1990s.

After growing up in the environment of Soviet atheism and having looked for a spiritual home in several churches and spiritual circles, I was paradoxically still a non-religious person looking for advanced forms of religious experiences. Perhaps such a fixation on the quest for the Holy Grail of mystical experience was partly escapism, but I believe that there was also a part of intuition that guided me towards healing and development. Some interesting phenomena I had experienced during my experimentation with various methods of alteration of consciousness were just enough for me to keep on trying. However, the majority of my time and efforts during my 20s and 30s were devoted to my family, economic survival, daily work and health.

In 2011, I was 40, a physics researcher living in Estonia, and my personal situation again allowed me to devote some time and resources to this long-standing quest. I had just completed my first year of university studies in psychology. My decision to study psychology was motivated by the hope of understanding the human consciousness and the fascinating but understudied varieties of all its various states – as such, the decision was directly related to that special interest from my youth. To compensate for my weakness of faith and lack of mystical gifts, I found that self-experimentation with psychoactive substances, a method also used by several trusted and lauded scholars (e.g. Emil Kraepelin,

William James, Richard Evans Schultes, Albert Hoffmann, Betty Eisner, Huston Smith, Dennis McKenna, William Richards and many others) was worth trying in a safe and spiritually-oriented environment, even if it felt somewhat like shifting my aim from the Olympic to Paralympic. In my naturalistic-pantheistic worldview of that time, a natural substance capable of temporarily changing “the brain I am” seemed like a promising tool and a last-chance remedy for achieving these mysterious higher states should they really exist. My inquisitive and sceptical nature, belief in rationality and education in science may have impaired the development of my faith. However, the same reasons may have also rendered me less susceptible to the widespread cultural belief that by ingesting a psychoactive substance one deserves punishment as they have endangered public health. Nevertheless, I did not want to risk my health nor break the law. As such, I found a safe and legal way to have a practical experience in the *Santo Daime* community of Netherlands.

Santo Daime is a syncretistic religion born in Brazil and based on folk Catholicism with influences from Kardecist Spiritism, Amazonian indigenous and mestizo *vegetalista* traditions, Afro-Brazilian spiritual practices and nature worship. This religious movement was founded by Irineu Raimundo Serra (emically, *Mestre Irineu*) in Brazil at the beginning of the 1930s (Labate and Pacheco, 2011; Dawson, 2013b; Barnard, 2014). It is the oldest of the three major Brazilian ayahuasca religions (the two others being *União do Vegetal* and *Barquinha*). The largest branch of *Santo Daime*, formerly called CEFLURIS and now named ICEFLU (*Igreja do Culto Eclético da Fluente Luz Universal*, translated to English as *Church of Eclectic Worship of the Flowing Universal Light*) expanded the practice out of the Amazon into the rest of the Brazil.

Since the 1990s, *Santo Daime* has spread all over the world (see e.g. Balzer, 2005; Lowell & Adams, 2017) and it now has practicing groups in the United States, Japan, Canada and at least 14 European countries. A special variety of ayahuasca prepared in a dedicated community ritual (*feitio*) (Bomfim, 2008; Dawson, 2013a) is the sacrament of this church. The participants drink the sacrament during the ceremonies (*trabalhos*, Portuguese for “works”). The central importance of the sacrament for the practice of the church is exemplified by the fact that both the Church and its sacrament bear the same name, *Santo Daime*. Both of them are legal in Brazil, but of different and often uncertain legal status in other countries. The Brazilian congregations do not advertise themselves and some members outside the upper Amazon may keep a low profile about their religious affiliation. However, they practice their religion openly in their characteristic premises designated by the *cruzeiro*, the double- or triple-beamed Caravaca cross (see Figure 4). They also accept sincere visitors who find them, learn about them and agree to follow the quite demanding ritual format. The format requires participants to firmly stay at their designated places in the ceremonial room and pray, sing or dance together in a predetermined and coordinated way. Collaboration with Brazilian churches and mutual visits with common *works* are often the catalyst for forming new *Daime* groups outside of Brazil.



Figure 4. Exterior (on the left) and interior (on the right, the central table) of a major *Santo Daime* church in Brazil. A unique feature of this particular church is the live *jagube* (*Banisteriopsis caapi*) plant growing at the table, supported by the central cross and spreading its branches through the roof, as seen in the photo on the left.

Two *Santo Daime* churches in the Netherlands, *Ceu da Santa Maria* and *Ceu dos Ventos* started their activity in the Netherlands in the 1990s (Hanegraaff, 2011). They were legalized there through a court process in 2001 (ICEERS, 2019).

My first visit to *Santo Daime* church of *Ceu da Santa Maria* occurred on June 30, 2011 in Amsterdam. My participation in the session (emically, “work” – from *trabalho*, meaning “work” in Portuguese) was motivated by my personal spiritual search and accompanied by considerable trepidation. During this event, I found that the practice of the church was indeed safe and disciplined, and the people I met in the congregation were friendly and reasonable. My experience during the session was intense and different from what I had expected. However, I also realised that what I had encountered was necessary for my spiritual and personal development at this current time. The weakness of my faith was redeemed and forgiven by the force of the sacrament, and what was impossible for my own will became possible by that grace.

After this event, I felt a significant improvement in my mood, health and functioning. I did not feel any need to resume taking my medication for an autoimmune disease that had been diagnosed in 2002. I see in this course of events enough material for a story of “miraculous healing” (words of my doctor), and I am happy and thankful for my improved health. However, the scientist in me has to remain open to other possible explanations such as an initial misdiagnosis or a spontaneous recovery.

During my visits to the church, I was impressed by the complete absence of even the slightest pressure to convert into this religion by affirming adherence to

any specific beliefs or commitments (except some basic rules to ensure safety and follow the tradition during the works themselves), or to become a dues-paying member of the local church. As I learned later, this was a result of the unique rule of *Santo Daime* that forbids proselytizing and inviting people to the church. This rule of the church is often expressed as “everybody is welcome but nobody is invited” and “Daime is for everyone but not everyone is for Daime”. A member is allowed to say “it has been good for me”, but not “it will be good for you” – because there is no way to know for sure. Before the *work*, participants sign a declaration that they know what they are going to take, that they do not have any contraindications and they do it of their own free will. The rule to avoid inviting guests helps the first-time participants to take responsibility for their own decision to participate. The rule also protects the church against accusations in cases of difficult experiences.

There are good reasons why the services are called “works” in the church: praying, singing and sometimes dancing for long hours *com forca* (“with the force”, the Portuguese emic expression for feeling the effect of the sacrament) can be intense both physically and emotionally. During the works, I developed my ability to sing and my physical stamina (both areas of life in significant need of improvement), and learned some Portuguese. More importantly, I learned to endure and navigate the *forca*, to know myself better and to overcome fear and resistance. These self-regulation skills have been useful for coping with challenges and difficult moments also in other areas of my life. The psychological changes I have noticed in me since that time (e.g. increased openness, flexibility, imagination, aesthetic and emotional sensitivity, and also tolerance towards different ideas and worldviews) have not made my life easier. However, they have made me feel more alive and connected. For now, I am not searching for a realization of a self-constructed idea of an ecstatic experience, and my personal research question about the possibility of mystical experience in an ordinary human has been answered affirmatively.

In 2014, I felt ready to ‘receive my star’ (i.e. to become a *fardada*, a “uniformal” member of the *Santo Daime* religion). I joined a smaller congregation called *Ceu dos Ventos*, based in the Hague. The procedure was less difficult than I had expected. At the interview with the church leader (*Padrinho*) before the ritual, I was not asked to recite prayers in Portuguese by heart nor was I required to denounce the Big Bang theory in favour of his more beautiful explanation of the concept of creation: namely, that creation of the world is ongoing, and humans, created in the image of God the Creator, are His co-creators. Due to my prejudice from reading about “extreme religious movements” which depicted these as controlling and authoritarian, I had even psychologically prepared myself to make some compromises between my internal and external testimony of faith. However, to my surprise, the need for such a sacrificial compromise never occurred – I have never been forced to present my faith as stronger than it actually was. I also became an administrative member of the church, paid my dues and visited the services as my time and resources permitted.

In 2018, despite almost 20 years of legal, safe and disciplined religious practice, the *Santo Daime* church in the Netherlands was outlawed as the court “assumed public health to be under threat by virtue of the fact that DMT is contained within prohibitive drug legislation” (ICEERS, 2019). In 2019, the Supreme Court of the Netherlands (*Hoge Raad*) confirmed the decision (Hoge Raad, 2019), and the European Court of Human Rights declined to review the case.

I never expected that in the European Union it would ever be possible to have anyone’s legal religion outlawed, forbidding the existence of established churches with hundreds of members without any evidence of them having ever endangered or harmed anyone. The members of the church were forced to live in constant danger of persecution (Adelaars, 1999; Hobbs, 2018; Bauchet, 2019) or abandon the core of their religion. Despite the costs and efforts, occasional visits to countries where *Santo Daime* is legally allowed to practice (e.g. Brazil, Spain, and until 2022 Italy) provided consolation to those church members who could afford to travel. This lasted until the start of the pandemic of coronavirus at the end of 2019 that restricted travel and meetings. Many local works and the yearly European meetings (*encontros*) of *Santo Daime* churches (which usually had taken place in Italy or Spain) were cancelled due to the pandemic, and travel to Brazil became complicated. The partaking of the sacrament in the beautiful ceremonial room at the well-decorated table in the Church, (see Figures 4 and 5) became for many a bittersweet memory.



Figure 5. Partaking of the sacrament with the *Santo Daime* church *Ceu dos Ventos* in Netherlands (when it was legal there).

Currently (as at May 2022), the members of *Santo Daime* in the Netherlands (and in other European countries, such as France and Belgium) suffer from serious restrictions of their freedom of religion. *Santo Daime* churches or small groups exist in at least 14 countries of Europe. Most of the members have not been actively persecuted, but the lack of legal certainty forces them to hide their religious practice and religious identity. Such marginalization is perceived as unjust and it erodes their trust in society and the State, making these people more vulnerable to conspiracy theories and misinformation about, for example, health and political issues.

There were at least three substantial motivations for ayahuasca becoming a subject of my academic research. Firstly, when studying psychology, I had to choose a topic of my Master's thesis, so I chose the topic that was extremely interesting and personally significant for me. I was not so young any more, so I could not afford spending my time to study anything that I was not really interested in. This was also my answer to one of my superiors who, with the best intentions, suggested that I study "something reasonable" instead.

Secondly, my research was also my contribution to my religious life. Members of the Church often use their existing skills also in their religious life. For example, when musicians or visual artists find their way to Santo Daime, they start to use their talents and skills also in that religious context. Musicians play instruments during the *works*, lead the singing and make their contribution to the growing collection of spiritual hymns (*hinos*) (Rehen, 2007). Artists will soon find themselves decorating the ritual space (*salão*), or creating visual art and handicraft inspired by their visions. Lacking musical and artistic gifts, I nevertheless had education in science and research experience, and so I applied these skills to my observations and experiences in this religious context. Thirdly, I saw the scientific, rational and critical perspective as a safeguard against getting personally involved in dysfunctional group processes and religious extremism.

Santo Daime is generally welcoming to science. The practice is outlawed or persecuted in some countries. Clarifying the facts about this practice and scientifically assessing its safety may help to dissolve fears stemming from prejudice and lack of knowledge, and the persecution may end. However, it has been known for a long time that the legal status of drugs is not well correlated with their harmfulness (Nutt et al., 2010), but no substantial changes in legislation have resulted from this knowledge. The law and its enforcement has never been perfect embodiments of truth and justice, and probably never will be. The impact of critical ethnography on politics and legislation is very limited. However, there is always hope for improvement.

Soon after my first visit to the *Santo Daime* church in 2011, I learned that ayahuasca is also used in my home country Estonia in neoshamanic rituals, and I began to study it. In 2016, I finished my Master's thesis on the psychology of ayahuasca users in Estonia (Kaasik, 2016). This was a good topic for my thesis because (i) it was understudied: research about psychedelics was almost non-existent in my country, (ii) I had insider knowledge about ayahuasca that gave me an advantage in understanding the users, and (iii) I still had a reasonable distance

from the topic because I did not directly conduct any studies on the Church where I was a practicing member. I studied ayahuasca use in Estonia (where it takes place mostly in a neoshamanic format) and not directly at the *Santo Daime* Church in the Netherlands of which I am a member of.

The studies contained within this thesis are a natural continuation of my studies for my Master's thesis. The research presented in this thesis extends deeper into the data collected by the psychological tests and questionnaires, and it is also multidisciplinary due to knowledge being utilised from the disciplines of chemistry and religious studies

Using the example of descriptions of ayahuasca visions by Benny Shanon (Shanon, 2003), Wouter Hanegraaf stated that studying spiritual rituals in which purposefully induced altered states of consciousness have a central role is not only permissible, but it is an outright necessity that (at least some) researchers have participated in the practice in order to collect knowledge that cannot be obtained in any other way (Hanegraaff, 2011, pp. 94–98).

There are both advantages and disadvantages in studying one's own or similar cultural practice. It is good to be aware of these advantages and disadvantages (they are briefly analysed in Article IV), and to collaborate with researchers who have different positions. It is the multiplicity of viewpoints, including the multiplicity of the degrees of participation in the studied practices, that enables the research community to form a more complete and multidimensional overview of the studied phenomenon.

As a humanly imperfect researcher and a humanly imperfect follower of the *Santo Daime* religion, I find myself in the role of translator, interpreter and intermediary. The experience of seeing the phenomenon of ayahuasca and its ritual use from several different and sometimes contradictory perspectives has been intellectually enriching, challenging and strangely enjoyable.

However, my situation as a researcher in such a liminal position is vulnerable, emotional and messy. It invites various and sometimes irrational reactions from different parts of society. I find myself somewhat accepted and recognized by both the ayahuasca (and *Santo Daime*) culture and the academic culture due to my participation in and my contribution to them. However, I sometimes feel alienated (and “suspected”) by the ayahuasca community due to my connection to the academic community, and I also sometimes feel alienated (and “suspected”) by the academic community due to my connection to the ayahuasca community.

People from different educational backgrounds and specializations are interested in my research. I have felt supportive recognition in the user communities for trying to clarify the truth about ayahuasca so as to give new perspectives of justice in a scientific way. I have also received undeserved admiration from people whom I met to share my knowledge about ayahuasca. As an expert being educated using public funding, I saw such consultation as my duty of dissemination of safety-enhancing knowledge, but they saw it as a personal gift. Conversely though, I have also received much hostility towards my research. For example, I have received a covert attack on my scientific work for which I can only explain as a result of envy for recognition of my work in the *Santo Daime* and the psychedelic

research community. As another example of this hostility, one of the reviewers of my Article III wrote that if ayahuasca is illegal in Estonia, the article should not be published, and “the police should be called”. I cannot see any good reason to call the police for conducting research that was approved by the University’s ethics committee; nor for trying to prohibit the publication of the results of the research based on this flawed legal opinion. As another example, a conference participant declared himself my enemy straight after I had given my academic presentation at a local conference. The most absurd example so far was that a lady from a Christian sect accused me of sending “my demons” to physically torment her. She did not accept my recommendations to seek medical help, as she predicted that doctors would not agree with her self-diagnosis of “my setting of demons on her”. However, the “demonic attacks” and her repeated calls to me and my family stopped after a surgical intervention to correct her physical disease. Therefore, it is not an exaggeration that ayahuasca and research on it can get literally demonized in our society.

I have received both positive and negative responses throughout my journey to learn the truth about ayahuasca. Negative responses to controversial topics are to be expected as “in all autoethnographies, however, the storyteller and related loved ones may be made vulnerable by what is revealed” (Ellis & Adams, 2014, p. 262) by breaking the silence. This dynamic liminal status, travelling back and forth through the borderlands of research and practice, has given me the opportunity to facilitate this very needed transfer of knowledge between these two cultures (i.e. the ayahuasca culture and the academic culture).

The practically useful purpose of my thesis for the society is to open a channel of communication to disseminate factual knowledge about ayahuasca to interested parties. This new knowledge will benefit society by opening up discussion on how to mitigate for the risks of entheogenic practices and enhance their potential benefits. By finding new knowledge and spreading its light between communities, I aim to dissolve fears and prejudice, to enable harmony and justice in the society, and help to alleviate human suffering.

4. Main results and author's contributions

There are three main research areas of this thesis: (i) the determination of the chemical composition of ayahuasca, (ii) psychology of ayahuasca users, and (iii) spiritual experiences during ayahuasca rituals and their long-term effects. Each of these three research areas was studied using different types of methods and data. The following sub-chapters 4.1, 4.2 and 4.3 each contain an overview of the pre-existing knowledge in the respective field of research and the position of my research problem in it. Each sub-chapter also includes a description of the specific methodology used to solve the specific research problems together with the main results and conclusions. Chapter 4.1 also updates the published results about chemical composition of ayahuasca with a necessary correction. These chapters also give the background of the research process and its conditions and limitations in the context of the study as a whole, and describe my contribution to the articles published with co-authors. This interdisciplinary multimethod approach was designed to yield a multifaceted view on the phenomenon under study. This is accomplished by studying each of its different aspects by the means suitable to that aspect, and then integrating the extracted knowledge about all the three aspects into a common multidimensional view.

4.1 Chemical composition of ayahuasca

The chemical composition of ayahuasca depends on the constituent plants and possible additives, the procedures of processing them (as described below) and the conditions of storage of the brew.

Overview of research on chemistry of ayahuasca. Previous studies of the chemical composition of ayahuasca and its constituent plants, notably the early works of Rivier and Lindgren (Rivier & Lindgren, 1972), and the seminal studies of Jace Callaway (Callaway, 2005; Callaway et al., 2005; Callaway, 2006) and Dennis McKenna et al. (McKenna et al., 1998), and followed by more recent results from high-precision analyses using advanced analytical instruments (McIlhenny et al., 2009; Pires et al., 2009; Gaujac et al., 2013; Santos et al., 2017) have found huge variations in the concentrations of psycho- and bioactive alkaloids in ayahuasca. These analyses usually determine the concentrations of DMT, harmine, tetrahydroharmine, and harmaline in ayahuasca. The variability of the overall concentration of the brew is, in practice, balanced by adjusting the consumed doses. To determine the actual doses of alkaloids and observe the dose-effect relationships, brews with measured concentrations of alkaloids in it have been used in measured doses in clinical experiments (Callaway et al., 1999; Riba & Barbanoj, 2005; Domínguez-Clavé et al., 2016). However, not only the overall alkaloid content, but also the ratios of concentrations of specific alkaloids have been observed to vary over a large range. Even considering the large range of variability, some of the published concentrations and ratios of concentrations of specific alkaloids were clearly out of the usual range of variability. For example, unusually high ratios of harmaline to harmine have been observed in some studies

(Pires et al., 2009; Uthaug et al., 2018). This indicates either systematic errors in the measurements and/or in reporting the results, or unusual compositions of the brew that may have resulted from the use of substituents (e.g. *Peganum harmala* seed extracts) instead of the traditional constituent plants (*Banisteriopsis caapi* and either *Psychotria viridis* or *Diplopterys cabrerana*).

The research task. A significant part of my work, Article I, was dedicated to clarifying the chemical composition of ayahuasca used in different countries and traditions by chemical analyses of ayahuasca samples (Kaasik et al., 2021), and to look for meaningful patterns, differences and correlations in the data. In this work, 102 samples of brews used as ayahuasca in different countries and traditions were collected. The concentrations of DMT, harmine, tetrahydroharmine and harmaline in the samples were measured by high-performance liquid chromatography and the samples were tested for non-traditional additives.

Motivation and background. At the planning stage of the thesis, researching the chemical composition of ayahuasca was considered to be an auxiliary task. This was especially true as finding the possibility of using expensive high performance liquid chromatography equipment and technical help for chemical analyses, standard substances and other necessary resources was far from being guaranteed. However, as the research participants shared their very different experiences in their answers to questionnaires (Kaasik, 2019) and during the interviews (Kaasik & Altnurme, 2021), it became increasingly impossible to ignore the question “Did all of them really drink the same brew?” However, favourable opportunities and resources necessary to perform this work presented themselves just in time like a higher power were composing a puzzle of conditions far above my head, and I just had to present myself at the right time and place, ready and willing to do my work. The answer from the chemical analyses performed at the University of Campinas in Brazil answered this question completely: not all ayahuasca is the same. The variability of ayahuasca is at least as rich as the variability of alcoholic beverages, and due to its greater biochemical complexity, even richer. The observed variability of effects of the brew is affected by the variability of the chemical composition of the brew, as the concentrations of active substances and their ratios varied over a large range. However, as “set and setting” (Zinberg, 1986; Hartogsohn, 2017; Hartogsohn, 2021) (i.e. individual background and the circumstances of the ritual) also largely contribute to the variability of the experience, the same dose of the same brew may manifest very different effects in different people, or in the same person on different occasions.

The mind-altering power of ayahuasca, its *forca*, is directly causally connected to its special and sacred status among the ritual users, and also depends on the bio- and psychoactive substances in the brew. As opposed to sacramental wine used in the majority of Christian churches which is transformed into the Blood of Christ through the transcendental act of transubstantiation or via sacramental union, the *Santo Daime* sacrament is sacred from its birth. Even the plants and harvested plant material from which it is to be produced are sacred during the preparation of the brew and they have to be treated with proper reverence.

It would not make much sense for religious studies to measure the concentration of ethyl alcohol in the sacramental wine used by different denominations

despite the fact that churches which substitute the sacramental wine with alcohol-free alternatives are likely to have some corresponding characteristics in their doctrines. However, examining the chemical composition of ayahuasca brews makes sense for religious studies. This is because of the connection between spiritual experience and the *forca* of the sacrament, which in turn is conditioned by its chemical composition. It also makes sense from the viewpoint of safety and ethics as non-traditional additives and arbitrary dosing may constitute a health risk. Furthermore, not informing or misinforming participants about what they are going to ingest violates the ethical principle of autonomy and the requirement of informed consent.

My analytical work on the chemical composition of ayahuasca started when I had the fortunate possibility to visit the University of Campinas (UNICAMP) in Brazil to participate in two intensive winter schools “Interdisciplinary Perspectives of Ayahuasca” that were both organized by Prof. Luís Fernando Tófoli. During the courses, the topic of the chemical analyses of ayahuasca samples was introduced to the participants of the event by Prof. Alessandra Sussulini and her team at the Institute of Chemistry of the UNICAMP. This initiated fruitful and enjoyable collaboration. This research team had already developed and validated a method (Souza et al., 2019) to determine the concentrations of the main bio- and psychoactive compounds (DMT, harmine, tetrahydroharmine and harmaline) in ayahuasca. Learning this method and using it to analyse samples of ayahuasca from different countries and traditions resulted in Article I (Kaasik et al., 2021).

Preparation of ayahuasca from the constituent plants. The chemical composition of ayahuasca depends on the process of preparation. To prepare ayahuasca, the participants beat fresh stems of the vine until these are soft and shredded. The vine is placed into a cauldron, in alternating layers with fresh leaves of *Psychotria viridis*. Then, they add water to the cauldron and then boil the preparation over fire. In the Colombian version of the brew called *yage*, another DMT-containing plant *Diplopterys cabrerana* is used instead of *P. viridis*. In some traditions (including *Santo Daime*), the resulting liquid is boiled again with a new batch of fresh plants, thereby increasing the strength of the brew. On the other hand, repeated extractions of the same plant material are often done, and the weaker brews resulting from it are concentrated by long-time boiling to evaporate water, sometimes resulting in a thick honey-like consistency of the final product (*mel*) or even an almost solid *gel*. In some traditions (but not in *Santo Daime*), additional plants are added to amplify and modify the effects of the brew. In some contemporary neoshamanic circles, additives or substitutes are used together with or instead of the traditional plants.

Preparation of Daime. From 2017–2019, I participated in the community rituals in the preparation of the *Santo Daime* sacrament (*feitio*) on three occasions. On every occasion, the ritual lasted a week during which the participants worked in shifts so that the sacred fire under the cauldrons with the sacrament was constantly burning. Traditionally, the process of cooking Daime that involved the laborious pounding of the vine by handheld wooden mallets as well as carrying heavy and hot cauldrons were the responsibility of men (see Figure 6).



Figure 6. The ritual of *feitio*, preparation of the *Santo Daimé* sacrament: processing the *jagube* and boiling the brew is the work of men.

The male “*battalion*” worked under the command of an experienced leader of the preparation work, the “*feitior*”. Differently from many indigenous and neoshamanic processes of preparation, the bark of the vine, although known to contain a significant amount of beta-carboline alkaloids (Wang et al., 2010), was carefully removed and discarded to leave the outer layer of the stem just below the bark intact. Women performed the less physically demanding tasks such as picking and cleaning the leaves (see Figure 7), and working in the community kitchen.

All the work of *feitio* was accompanied by the frequent partaking of small doses of the sacrament, and full ceremonies were usually conducted every other night. At one of the churches situated in the forest around the lower Amazon, the sacrament was freely available to the participants for self-administering during the weeklong ritual. At another church in the area of mountains between Rio de Janeiro and Sao Paulo, the sacrament was distributed in small quantities to the participants of *feitio* by local guardians of the activities at regular intervals. Partaking was socially expected, but voluntary, and it was possible to request a smaller dose. Therefore, while doing a “participant observation”, I was free to choose my position on the continuum between participation and observation – or rather to choose between observing subjective or objective phenomena, as a dedicated researcher rarely stops observing even after a full glass.



Figure 7. The ritual of *feitio*, preparation of the *Santo Daime* sacrament: picking and cleaning the leaves of *rainha* is the task of women.

At the *feitio*, I saw how seven or more different types of the sacrament were produced from just two large piles of the plants, “the vine” and “the leaves”. Each type of sacrament was different in their appearance, taste and effects. Each batch of the fresh Daime was carefully set apart, the containers were tightly closed when their contents were still hot (to avoid fermentation) and each container was labelled with the type (*grau*, “degree”) of the Daime, and place and time of its production. Different “degrees” of Daime are known to produce somewhat different effects, and these differences are taken into account in practice to adjust dosages and choose a suitable sacrament according to the type and phase of the ceremony. The art and science of the preparation of ayahuasca and Daime deserves more detailed research in the future.

Sample collection. As a natural scientist, I was interested in how these quantitative and qualitative differences are reflected in the chemical composition of ayahuasca, both inside of the *Santo Daime* tradition, and in comparison with other traditions. One advantage of “insider ethnography” became apparent when collecting the samples. Although guests are accepted to *Santo Daime works* after an interview and instruction, the sacrament is not given to participants for taking out of the church, and participation in *feitio* is usually reserved for members of the church. Even in churches which I had never visited before, my status as *fardada* (uniformed member) of the Church and an explanation of why the samples were needed for my study was in all cases enough to receive small (ca. 5 ml) samples of the sacrament (see Figure 8), while the usual single doses for partaking during the session remained between 10 and 50 ml. I asked for samples of different types of the sacrament. In some places I had the chance to see the whole treasury of the church. This was a large cupboard full of different brews from many years and places of *feitio*. First-time visitors who are not members of the church are rarely

allowed to view such sights. Despite this, I was allowed to let my *curious pipette* disturb the peace of the precious liquid, which according to the *Santo Daime* doctrine is not only a sacrament but also a sacred being.



Figure 8. Small subsamples (three drops each) of ayahuasca samples chemically analysed for Article I. In the article, the individual subsamples in the photo are linked to their chemical composition.

The information about my research was spreading in the community and people started to bring me interesting samples without me having to ask. In some places, they already knew that I was coming to ask for samples, even before seeing my little vial. In some cases, I received the sample under condition that I inform its giver about the results of the analyses, and I always kept this promise.

Similarly, in indigenous and neoshamanic ceremonies, the organizers usually gave small samples of *the medicine* to me without hesitation after I had explained the research and its aims, and, more importantly, spent the night in the circle.

The number of samples was sufficient for a study of this kind. However, the method used to collect the samples certainly caused a certain selection bias, which makes quantitative estimation of the prevalence of substitutes and additives impossible. On some occasions, I asked if it were possible to participate in a neoshamanic ceremony without the partaking of *the medicine*. Such requests were usually denied unless I was there as a helper: useless onlookers are not needed for this kind of work. Usually it was possible to ask for a smaller dose, but the brews of the facilitators with whom my trusted respondents or I did not want to drink mostly escaped the sampling. Due to these reasons, my selection of samples

is somewhat near to representativeness only for the *Santo Daime* samples (for which I had good reasons to trust the sacrament in all their churches I happened to visit), but it may not be representative for the samples collected in the other contexts. Analogues and substitutes may be much more widespread in European neoshamanic rituals than the occasional findings about the use of additives and substituents, which were described in Article I (Kaasik et al., 2021).

Results of chemical analyses. According to the chemical analyses, the *Santo Daime* samples of different degrees and ayahuasca samples from other traditions were indeed substantially variable not only in terms of their overall “strength” (summary concentrations of the analytes), but also qualitatively in terms of the ratios of the concentrations. The study exceeded previous similar studies in the number and diversity of the collected samples, and included a meaningful comparison between brews from indigenous, neoshamanic and religious traditions. The article presented findings about higher average concentrations of DMT as well as more variable concentrations of DMT in neoshamanic ayahuasca samples (compared to indigenous samples). This may indicate use of higher and more variable proportions of DMT-containing admixture plants.

Among samples from Europe, the chemical analyses revealed analogue ayahuasca that contained the pharmaceutical antidepressant moclobemide, a high concentration of DMT, yuremamine (indicating the use of *Mimosa tenuiflora* instead of traditional *Psychotria viridis*) and very low concentrations of alkaloids of *Banisteriopsis caapi*. For the first time, bufotenin (initially misidentified in Article I as its structural isomer psilocin) was chemically detected and quantified in brews used as ayahuasca in neoshamanic ceremonies. There were more samples and additional information that indicated use of ayahuasca analogues in Europe. No substituents or additives were found in the analysed samples from Brazil nor in the samples from *Santo Daime* ceremonies in Europe. The relative concentrations of alkaloids (the ratios of DMT/harmine and tetrahydroharmine/harmine) were significantly correlated with each other among indigenous and *Santo Daime* samples. This indicated a balanced composition of the brew as the visionary, psychedelic properties of DMT were balanced by the mood-enhancing, serotonin-elevating properties of tetrahydroharmine. Such a correlation was not observed among the neoshamanic samples due to the presence of several samples with unusually high and very variable concentrations of DMT. Such high concentrations of DMT may reflect the use of non-traditional (“analogue”) plants, and especially considering the use of *Mimosa tenuiflora* rootbark or its extracts.

Unfortunately, the participants of the ceremonies with ayahuasca analogues were usually not adequately informed about the composition of the brew. The study showed that the brews offered as ayahuasca may be very different, and some of them even did not deserve this name. As a result of the study, I can recommend that users avoid facilitators who do not inform their participants clearly and pro-actively about the composition of the brew. However, legal restrictions of ayahuasca use also suppress open communication about it, and if the facilitators receive their brew from someone else, they themselves may not be properly informed about its composition. The results of the study indicate a strong

need for a better awareness about both the constituents of the brew and the development of ethical self-regulation among facilitators of ayahuasca ceremonies.

Limitations of the study and needs for further research. Besides a lack of representativeness in sampling, one limitation of the study was that we did not obtain reference standards for the non-traditional additives which we were looking for (yuremamine and psilocin). The identification of the compounds was determined based on their molecular masses and their fragmentation patterns when compared to reference mass spectra. This meant that there was a possibility that some of the additives had been misidentified as compounds of the same molecular mass and similar fragmentation pattern.

The person who had concocted the brew that lacked a significant amount of *B. caapi* alkaloids, but contained moclobemide (samples 15 and 25 in Article I) admitted to having added moclobemide. However, they denied using psilocin or *Psilocybe* mushrooms in the brew. I also failed to see any mushroom spores in the substance under the microscope. To verify our qualitative findings about additives, I took some samples for an independent analysis to a chemical laboratory at Tallinn University in Estonia. There, and using proper reference standards, Jüri Laanoja confirmed the identity of moclobemide and determined its concentrations in these two samples (Laanoja, 2021, p. 31). The concentrations in the brew were found to be low compared to the usual therapeutic doses of moclobemide (300–600 mg/day (MIMS, 2021)).

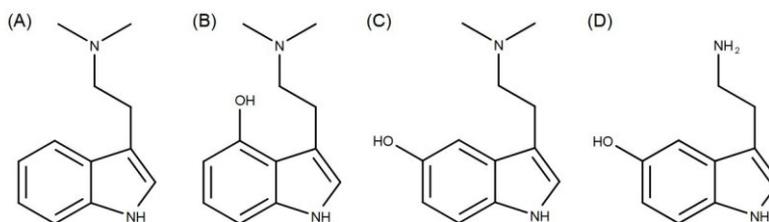


Figure 9. Structural similarity of the following alkaloids: (A) N,N-DMT traditionally present in ayahuasca; (B) psilocin (expected in samples 15 and 25 on the basis of qualitative analyses presented in Article I); (C) bufotenin (found in these samples instead of psilocin, using a proper reference standard); (D) serotonin, the natural endogenous agonist of several receptor subtypes that mediate psychedelic effects. This figure is reproduced from Figure 2 in the Master’s thesis of Jüri Laanoja (Laanoja, 2021, p. 10) with his permission.

More importantly, using proper reference standards, Laanoja also clarified that the psychoactive alkaloid which was identified as psilocin in Article 1 was actually **not psilocin but its structural isomer bufotenin** (see Figure 9). Bufotenin, a psychedelic found in some toads and plants, is orally active even without MAOIs but substantially potentiated by their presence. Bufotenin was quantified in the problematic samples, and found to be present in moderate concentrations (Laanoja, 2021, p. 31). I compared its doses calculated from these concentrations

(at realistic doses of the sludge up to 50 ml) to the doses used in self-experiments of “the psychonaut” Jonathan Ott (Ott, 2001). It seems likely that bufotenin, a compound previously not quantitatively detected in ayahuasca to the best of my knowledge (ICEERS Foundation, 2019), was the main psychoactive compound in that brew. I could only guess how it got there, and one of my colleagues from the Tallinn University workgroup joked about the author of that psychedelic cocktail soaking toads in it. According to Ott (Ott, 2001), the common plant sources of bufotenin are two trees, *Anadenanthera peregrina* var. *peregrina* (native name *yopo*) and *Anadenanthera colubrina* var. *Cebil* (native names *vilca* and *cebil*). The seeds of these plants have a long history of use in indigenous psychoactive snuffs, and *yopo* seeds are widely sold over the Internet.

The methodological conclusion from this identification error (psilocin vs bufotenin) is that it is always recommended to use proper reference standards (pure substances) for identification of analytes. In practice, however, following this advice may be difficult due to both financial and legal constraints.

In addition to the four studied compounds, other alkaloids have been found in the plants and the brew (Wang et al., 2010; Laanoja, 2021). Individually, and in combination with other known and unknown compounds, they may influence the effect of the brew. Further analyses and experimental studies are needed to detect and quantify such compounds, and to estimate their contribution to the effect.

This study raised further questions, new ideas and hypotheses. It is known that experienced users seem to prefer brews with higher relative concentrations of tetrahydroharmine (Callaway, 1999, p. 267). The results of this study on the samples from *Santo Daime* confirmed this observation. Clinical studies with ayahuasca have shown that after a dose of ayahuasca, tetrahydroharmine has a considerably longer metabolic half-life in humans than DMT and harmine (Callaway et al., 1999). These two facts, taken together, leads me to suggest that tetrahydroharmine may significantly contribute to the observed phenomenon of “ayahuasca afterglow”; that is the period of improved subjective wellbeing, enhanced mindfulness and cognitive flexibility (Murphy-Beiner & Soar, 2020) after the acute psychedelic effects of ayahuasca (visions and changes in perception) have subsided. Moreover, during long rituals with repeated doses (e.g. *Santo Daime bailados*, dance rituals with a duration of up to 14 h) tetrahydroharmine may even bioaccumulate, as the time period between the servings of the sacrament (1.5–2 h) is shorter than its mean pharmacokinetic half-life in the human body of 4.78 h (according to Riba et al., 2003). As one avenue for future research, it would be possible to test this hypothesis by a pharmacokinetic experimental study technically similar to that of Callaway et al. (Callaway et al., 1999).

The subjective experience of participation in an ayahuasca ritual and its long-term outcome are not only determined by the dose and chemical composition of the brew. The experience and its outcome also depend on the “set and setting” (Zinberg, 1986) that includes individual sensitivity, individual preparation and the individual’s expectations as well as on the physical, psychological and spiritual environment of the ritual. Contributions and interactions of these and

other factors influencing the experience and its long-term effects remain an interesting area of study for further research.

My contribution to this study of chemical composition of ayahuasca (Article I) included generating the idea of the project, designing the study, organizing the collection of the samples, and collecting the majority of the samples and their accompanying data. For samples 40–103, I also conducted the sample preparation (see Figure 10) and liquid chromatography (UHPLC-MS/MS) analyses under supervision of Prof. Alessandra Sussulini and Dr. Rita Souza. I processed the data statistically, produced the figures and drew most of the conclusions. I wrote the first draft of the article and repeatedly re-wrote it in the course of discussion with the co-authors and reviewers. All the co-authors read the manuscript, discussed the results, contributed with their ideas and interpretations, helped to correct the language and style, and approved the final manuscript.



Figure 10. Preparation of the samples for chemical analyses at the Institute of Chemistry, University of Campinas (UNICAMP), Brazil.

4.2 Psychology of ayahuasca users

Overview of existing research. The psychology, including psychopathology, personality and neuropsychology of regular ritual users of ayahuasca in Brazil has been studied reasonably well (Grob et al., 1996; Gable, 2007; Bouso et al., 2012; Barbosa et al., 2016). An assessment of psychological risks based on the review of research literature found that the dependence potential of ayahuasca and the risk of sustained psychological disturbance are minimal (Gable, 2007). Bouso et al (2012) published results of a psychological study of 127 members of two ayahuasca-using religions: *Santo Daime* and *Barquinha*. Each of these participants had been taking ayahuasca over a minimum of 15 years and for at least twice a month. This group of users scored significantly lower than the control group on all psychopathology measures used in the study and performed

better than the control group in cognitive tests. They found “no evidence of psychological maladjustment, mental health deterioration or cognitive impairment in the ayahuasca-using group” (Bouso & Riba, 2011). A review of 15 health-related research publications found that “[a]yahuasca subjects scored similarly or better than the control groups or normative data on most measures of substance use, psychiatric morbidity, personality, wellbeing and cognitive functions when compared to control groups or population norms”. Also, “predominant positive outcomes were elicited by qualitative interviews and questionnaires”, although some rare adverse effects were also reported (Barbosa et al., 2012). A five-year study of ayahuasca users in Germany, the Netherlands, and Austria classified ayahuasca rituals into three types: (i) rituals of Brazilian ayahuasca religions (mostly *Santo Daime*), (ii) neoshamanic rituals, and (iii) so-called “self-made” rituals often resembling psychotherapeutic settings (Schmid et al., 2010).

Motivation and aims of the study. The question remained as to what extent these results remain valid for less traditional forms of ayahuasca use in the cultural, social and biological context of Estonia. In 2014, I started academic research into the psychology of ayahuasca users in Estonia with my Master’s thesis at the Institute of Psychology of the University of Tartu. The study aimed to describe the mental health, personality and quality of life of ayahuasca users in Estonia, and then compare these findings to the respective findings in non-users, and to the population norms.

Methods and data processing. It was a cross-sectional case-controlled study of 30 ayahuasca users and a control group of 30 non-users matched with users according to gender, age and education. The participants completed standardized psychological tests and questionnaires, and a structured neuropsychological interview. To ensure objectivity, interactive measurements (i.e. structured interviews) were conducted by professionals who were instructed not to ask if the participant under study belonged to the group of ayahuasca users or the control group.

The processing of the data collected in this study resulted in two published articles: Article II (Kaasik & Kreegipuu, 2020) and Article III (Kaasik, 2019). Article II was centered around comparative statistics of psychometric indicators of mental health and quality of life while also considering ceremonial practices, subjective experiences, safety and users’ opinions about regulation. Article III focused more closely on the spiritual identities of users and long-term effects, and placed neoshamanic ayahuasca use into the societal context of new spirituality. The more qualitative nature of Article III and the fact that it was published in Estonian in an open-access journal also served as a way to “give back” to the communities of the studied participants.

Results. Ayahuasca use in Estonia was found to occur mainly in neoshamanic group ceremonies. The spiritual background of the studied users was diverse, in many cases eclectic, and related to new spirituality. The main motives for ayahuasca use were spiritual development, self-knowledge, spiritual experiences and psychological healing. The users reported mostly positive subjective consequences of ayahuasca use for their health and life that included a healthier

lifestyle, healing, better self-knowledge, psychological adjustment, overcoming fears and development of a wider worldview.

Some difficult experiences and adverse effects of participation in ayahuasca ceremonies were also reported that included, amongst others, emotional imbalance and too high emotional sensitivity, fainting and falling during the ceremony, and physical and emotional suffering.

No abuse of ayahuasca or addiction to it was found according to the respective clinical diagnostic criteria. The screening test indicators of depression and anxiety were, on average, lower in the ayahuasca-using group when compared to the control group. Satisfaction with life and happiness about life were higher in the user group. No deterioration of the mental health of ayahuasca users in comparison to the control group was found. The results are partially supported by an independent observational study of 73 healthy participants of ayahuasca ceremonies in the Netherlands and the Czech Republic, which found reduction of stress and anxiety, and increased satisfaction with life four weeks after the ceremony (Oorsouw et al., 2021).

When asked for their opinions about regulation of ayahuasca use by society, the majority of studied users supported reasonable regulation of ayahuasca use. Hopes for self-regulation were also expressed. A release of psychological tension, better quality of the brew, safer use, and potential therapeutic applications were prognosed by the participants as beneficial consequences of reasonable regulation. The participants supported legal use of ayahuasca in scientific, therapeutic, spiritual and religious contexts. The studied users perceived ayahuasca use in Estonia as a reasonably safe and self-limiting form of spiritual practice. Ayahuasca ceremonies have become a part of the diverse set of new spirituality practices in Estonia. Spiritual and worldly authorities have a chance to respond to this manifestation of spiritual diversity in a reasonable, evidence-based and dignified way.

Limitations of the study. The observed mostly positive evaluation of the practice by the studied users must be interpreted with caution. It cannot be interpreted as proof of safety or benefits of ayahuasca use by anyone, as both the user community and the research sample are self-selected. Users who do not find the experience beneficial are unlikely to become regular users and they are less likely to be included into sampling based on community connections. For example, if one were to interview skydivers, many of them would probably report enthusiastically about their experiences. However, this is still a small minority of society who enjoy such an intense activity. However, the results confirm the existence of self-selected groups of users who use ayahuasca in a structured way as a collective spiritual practice. They receive considerable subjective benefits without suffering any objective or subjective deterioration of their mental health or quality of life.

Limitations of the study also include sampling bias. Due to the study context (e.g. the legal uncertainty around ayahuasca use), it was obviously impossible to obtain a representative sample of Estonian ayahuasca users. One serious limitation of this study was the lack of information about the composition and dose of the used brew given the variability of composition of ayahuasca (see

subsection 4.2). This suggests that some users may have used ayahuasca analogues instead of traditional ayahuasca.

Another source of bias could be the underreporting of undesired effects by respondents with a generally positive experience of use. To counterbalance this bias, I invited people through the webpage of the study to share their negative experiences with ayahuasca. One person responded and reported an experience of participation in a neoshamanic ceremony which resulted in physical and psychological trauma. Their experience became uncontrollable after receiving a special brew that was given only to selected participants. The specific causes of the accident cannot be determined in retrospect. However, the participant's negative experience may have been caused by consuming an overly high dose of the psychoactive components and/or there were strong additives present in the brew. Taking into account the evidence on analogues and additives found in the analyses of chemical composition of ayahuasca, there is a need for a greater awareness about the composition of substances used in such ceremonies.

My contribution to this part of the study included devising the idea of the project, designing the study, obtaining the necessary permits and resources, finding participants to the user group, and collecting questionnaire-based data. The data for the articles were collected from 2014–2016 during my Master's studies. A psychiatrist and a psychologist who did not know if the respondent was from the user group or the control group, and instructed not to ask the respondent about it, collected data using interactive psychological tests and neuropsychiatric interviews. The participants completed non-interactive tests on their own. I processed the data statistically and interpreted the results, drew conclusions and wrote the articles (Kaasik & Kreegipuu, 2020; Kaasik, 2019). For Article II, my co-author and supervisor Kairi Kreegipuu contributed by supervising my work, providing psychological expertise and suggesting useful tools and methods, discussing the results, revising the article and proposing corrections. While Article III was published as a single-author article, both my supervisors commented on the text of the article (especially on the presentation of the conclusions) before its publication.

4.3 Spiritual experiences in aya-stories

The third and for me, the most interesting and enjoyable part of this thesis was based on 60 interviews with ayahuasca users. This qualitative study resulted in a system of categories, a summarised description of various human relationships with ayahuasca (including motivations for participating, ritual practices, experiences and long-time effects). The data related to spiritual experiences were selected for Article IV.

Motivation and aim of the study. The motivation for this study stemmed from understanding that a large part of variability of ayahuasca experience does not fit well into standardized tests or questionnaires as used in my previous studies. However, some insight into this part of information can be achieved from

free-form interactive stories told by the users. The research aimed to clarify the variety, the role and meaning of ayahuasca-induced spiritual experiences in the lives of individual users, the user community and in society.

The results were published in Article IV (Kaasik & Altnurme, 2021) in Estonian to both contribute to the limited Estonian discourse on the topic and to “give back” to the studied community. To ensure accessibility of the results for the Opponent and other readers of the thesis, the article is summarised in English below.

Method and sample. The plan for the semi-structured interviews was designed to cover the whole span of the respondent’s life experience with ayahuasca by recording their whole “aya-story” starting with how and why they found ayahuasca, and concluding with their present view and their future plans on whether they will use it again. The interview plan included questions about practices, experiences, long-term effects, the meaning of the practice and society-related aspects of it. We could predict that the use of ayahuasca is a spiritual phenomenon, but to avoid biasing the answers we did not include this assumption into the interview plan. The main interview questions were as follows:

- 1) How did you find your way to the ayahuasca ritual?
- 2) Please describe your first experience with ayahuasca.
- 3) How regularly do you participate in ayahuasca rituals?
- 4) How has the participation in ayahuasca rituals affected your life?
- 5) Which rules need to be observed in connection with ayahuasca rituals?
- 6) How should use of ayahuasca be regulated in society?

Auxiliary questions for specifying different aspects of the main questions were prepared to help the respondent to expand their answers, and additional spontaneous questions were asked during the interview according to the received answers.

Based on the results of the psychological study, I expected the variability in the contexts, experiences and long-time effects of ayahuasca to be high, and the interviews showed that it was even higher than I had expected. I had to collect 60 interviews before a reasonable level of saturation in the main topics of the interview appeared, and my resources would anyway not allow me to conduct and process more interviews.

Due to sensitivity of the topic, it was important to ensure the confidentiality of the participants and their informed consent. The participants were informed about the aims of the study and the use of their data orally before agreeing to meet for the interview. The interviews were conducted in person except in one case where the interview for practical reasons had to be conducted online.

The data were collected from 2016–2020 by conducting 60 interviews with Estonian ayahuasca users (63 respondents altogether, as three interviews were conducted with a pair of respondents each) in different locations, mostly in Estonia. Among the respondents, 38 were men and 25 women. The average age of the respondents was 39 with their age varying from 24 to 65. Forty of them had

completed university studies, eight had started but not (yet) finished university studies, 13 had completed secondary education but never went to university and two had not completed secondary education. The spiritual background of the participants was similar to the sample of the psychological study (i.e. largely characteristic to new spirituality). As their religious affiliation, the participants mentioned Christianity, Animism, Spiritism, the Estonian traditional “Earth faith” (*maausk*), Buddhism, *Native American Church*, *New Age*, spirituality, *Santo Daime*, “aya faith”, “plant faith” and having abandoned atheism after experiencing ayahuasca. They self-identified as a tree-hugger, a psychonaut and a mystic. There were also believers of nature, forest, plants, and themselves and their experience. Several of them believed in an unspecified God or creative force, or stated that they are religious without being affiliated to any religion, or open to all of them and recognizing their common core. Some of the participants were non-religious (e.g. calling themselves sceptic or unaffiliated) or did not answer the question about their religious affiliation.

The majority of the respondents had participated in neoshamanic ayahuasca rituals in the context of new spirituality. Some respondents had experienced rituals of *Santo Daime* and/or attended more or less traditional indigenous or retreat-type ceremonies abroad, or several types of rituals. There were also some occasions of individual use of ayahuasca – an understudied and even neglected phenomenon that deserves more scholarly attention.

These 60 interviews were summarised by qualitative content analysis according to the “summarising” method proposed by Mayring (Mayring, 2000; Mayring, 2014, pp. 65–78). This data processing resulted in two-level system of categories from which material related to *spiritual experiences* – understood in this work as experiences that inspire and support beliefs about the existence of immaterial reality, and possibilities to contact it and communicate with it – was selected for inclusion into Article IV (Kaasik & Altnurme, 2021).

Main results and discussion. The most frequent motives for participation in the ceremonies were healing, personal and spiritual development, searching for direction and clarity in life (“calibration of the life compass”, as one of the respondents said) and finding answers to practical and existential questions. Many participants also mentioned curiosity, and some were interested in the indigenous cultures and the shaman. Recreational motives for participation in the ceremony were expressed rarely. As it is known from previous studies, expectations of a completely pleasurable experience are unlikely to become fulfilled, and a pleasure-seeking attitude towards *the medicine* is not compatible with the reverential attitude of the community.

Clearly expressed spiritual experiences were identified in the interviews of the majority of the respondents (52 out of 63). Those experiences included:

- extraordinary sensory perceptions (“augmented reality” embedded into the real surroundings), interpreted in spiritual terms (e.g. seeing angels in leaves of trees; processes felt in the body, recognized as healing actions of *the plant*; hearing a guiding voice of a spiritual being during the ritual);

- dreamlike visionary journeys into past, future and other worlds, soul flight; out-of-body experiences, encounters with spiritual beings known from religion or folklore, or appearing as humans, animals, fantastic beings or figures of light;
- experiences of death and rebirth;
- transformations into an older or younger self, previous/future incarnations, animals or fantastic beings; changes of identity and self-awareness;
- experiences of universal love and celestial harmony;
- terrifying experiences of existential void, of the world and self as illusion, and dissolution of that illusion;
- mystical experiences with features described by James (James, 2014) and Stace (Stace & Smith, 1987), and similar to those explored using contemporary psychometric instruments such as the Mystical Experience Questionnaire (Maclean et al., 2012).

The intensity and affective tone of the described experiences varied greatly: some participants described only minor perceptual effects (but a part of them attributed great significance to these effects) whilst others gave detailed and colourful reports of wonderful and awe-inspiring or, on the contrary, difficult, overwhelming and terrifying experiences. Intense spiritual experiences were often remembered for a long time and they occupied a central position in the respondent's description of the ritual.

Some participants reported that their experiences were difficult to describe in words, but their visions could be represented in fine drawing. Some participants showed me their ayahuasca-inspired drawings and paintings and explained their meaning.

The perceptual contents of the experience may contain elements from life experience and religious background. This leads to a positive feedback loop that reinforces existing beliefs: "you see what you believe, you believe what you see". However, the experience may also contain unexpected phenomena that are difficult to describe. The visions may be beautiful and exquisite, celestial, full of light and colours – or dramatic, alien, even ugly and terrifying. Participants may see whatever they can imagine and much more. Visions can be meaningful and revelatory; they may show the deeper essence of reality or contain important gifts and teachings to be used later in life. However, sometimes the "train" of changing visions is perceived as excessive and overwhelming, or distracting from the purpose of the journey.

Many participants relate to the ayahuasca plant as a conscious being, healer and teacher. Some participants develop an ongoing relationship with *the plant* through repeated ceremonies. *The plant* may perform operations on the participant's body, talk to them during the ritual, and show and explain specific visions. *The plant* may send messages after the ceremony (e.g. in dreams). In accordance with internationally known folklore (and probably due to its influence), the spirit of ayahuasca was often perceived as a female entity – a mother or a grandmother,

the Queen of the (rain)forest. Characteristically to new spirituality, the common view of the spiritual world was usually relatively devoid of dangers and negativity. However, some participants warned against forces of evil, energetic parasites that ayahuasca may introduce into the life of the user. A couple of participants had been helped by ayahuasca in their fight against recurring attacks of witches in the spirit world.

The respondents reported many factors that may affect the experience: individual preparation and intention for the ceremony, previous life experience, dose and quality of the brew, conduct of the ceremonial leader and other participants, energies in the room and position of the stars amongst others. In order to get the full benefits from the ritual and have a less challenging experience, most users undergo a dedicated period of mental and physical preparation (days or weeks of a lighter and mostly plant-based diet, and sexual abstinence) before the ritual. A period of similar restrictions for integration after the ceremony is often recommended.

Many participants felt supported by the circle of the participants during the ceremony. The collective supportive context of the ritual helped also to interpret and integrate the experience. A neoshamanic ayahuasca ceremony is usually opened by a talking circle to share the intentions of the participants, and closed by another talking circle to share the experiences and received knowledge.

Inexperienced people who had experimented with ayahuasca individually outside of the ceremonial context reported some difficult and overwhelming experiences, and some seriously unsafe situations. According to observations and interviews, using ayahuasca outside the ceremonial context and/or without competent supervision is perceived in the community as both dangerous and disrespectful. Using ayahuasca on their own is certainly not recommended to people with no or little previous experience.

Intense spiritual experiences carry significant emotional and existential meaning, and may lead to changes in worldview and behaviour. Participants reported receiving many benefits that included physical and psychological healing, a healthier lifestyle, diminished fears, and a restored/increased appreciation of everyday life and the ordinary state of consciousness after the experience. There were also many reported beneficial consequences of participation. These benefits included improved relationships and a new circle of friends, new or renewed interests in creativity, philosophy and spirituality, an expanded worldview through an ongoing relationship with the plant spirit, and an increased appreciation of spiritual values.

However, no medicine has the same beneficial effects for everybody. For some participants, the main lesson learned from the experience was to avoid strange drinks. The intense experience during the ritual can include serious physical and/or emotional suffering that can even trigger a long-term psychological disturbance.

Difficult experiences with physical or/and emotional suffering encountered during the rituals are often believed to be necessary for cleansing and healing. "Ayahuasca gives you what you need, not what you want" is repeated among the participants like a slogan. This belief may give survivors of difficult experiences

a sense of meaning and hope for positive changes. However, endorsing this belief also enables the facilitators to delegate all the responsibility for the negative consequences to the participants themselves and *the plant*. The facilitators rarely admit any organizational mistakes or take any responsibility for long-term effects of participation. Undesirable experiences or after effects become assigned to some impurity or deficiency of the participant (e.g. insufficient preparation, past trauma, failure to surrender to *the medicine*, etc.) or to the mysterious will of *the plant* who is supposed to know better what the participant needs. After surviving a difficult session, the participant may hear from the facilitator why they either needed or deserved such an experience. One controversial facilitator of *bufo*² sessions even told his clients before the session that should they get an unpleasant experience during his session, it would be caused by “entities” attached to them during previous rituals with other facilitators.

Accounts of difficult and traumatic experiences with no beneficial results contradict the shared belief about the plant as a benevolent healer and teacher. Sharing such experiences may undermine the success of the “shamanic industry”. It may be seen as providing ammunition to prohibition or even as betrayal of the community in its fight for legality. Therefore, sharing of “non-standard” stories of suffering and harm becomes discouraged in the community, while “standard” stories of healing and receiving benefits are approved by the community and amplified through advertisements of service providers. The belief that “if it was not good for me, something must be wrong with me” may become internalized by members of regular user communities where facilitators endorse it. This internalized belief may become a source of bias in studies of long-term effects of participation.

Several participants had noticed the ongoing commercialization of ayahuasca rituals. They were aware of the dangers of participation in rituals with “fake shamans” who perform ceremonies “only to earn money” and do not have the skills necessary to *hold space* for a safe ceremony. Authenticity is valued. Some participants believed that the use of ayahuasca should remain limited to traditional indigenous rituals in South America.

The participants sometimes expressed opposite opinions about specific facilitators. From the collected stories I concluded that instead of facilitators being either real or fake, there exists a continuous spectrum of facilitators with different ceremonial styles and different levels of skills, ethics and responsibility. Individual compatibility certainly plays a role, but there are good and bad actors in every professional field, and this also applies to the facilitation and organization of ayahuasca ceremonies.

Criticism towards legal discrimination against users and carriers of the *plant medicine* was expressed. Several respondents hoped for future reasonable regulation of such practices and proposed several constructive ideas (e.g. regulation

² Vaporized and inhaled toad venom that causes a short-time out-of-body experience and contains 5-MeO-DMT, a candidate for the next big fad after the current ayahuasca boom.

of ayahuasca in the framework of alternative medicine) that deserve further analysis.

At the group and community level, the shared experience during the ritual unites the participants and protects the individual experience. Collective rituals and experiences shared among regular users result in a shared vocabulary to describe the experiences. This vocabulary is largely rooted in new spirituality and varies between specific user groups. The *sharing circles* contained in the neoshamanic format as well as informal communication result in forming a shared conceptual map of the spiritual reality. This map in turn contributes to interpretation and integration of the experiences.

Limitations. Limitations of the study due to self-selection of the sample are similar to the limitations of the psychological study in that the users who gave the interviews may be not representative of the user population as a whole. However, when doing interviews we found several respondents who reported experiences that were substantially different from the “standard story” of participation in a neoshamanic ritual and receiving healing and helpful guidance after undergoing a more or less difficult experience. It is possible that the bias towards positive experiences in this study was smaller than in the psychological study due to having a larger and more diverse sample.

In some interviews, the reported events occurred many years ago and the reports are vulnerable to the usual flaws of human memory. However, the descriptions of neoshamanic rituals, and the reported rules for preparation and participation were remarkably similar between respondents.

One serious limitation of this study is the uncertainty about the composition and dose of the brew used in the rituals. Given the variability of composition of ayahuasca and the possibility of use of substitutes, some atypical experiences and effects may have resulted from the use of ayahuasca analogues. Some of the interviews suggested that this may have been the case.

My contribution to Article IV consisted of choosing the topic of the research, writing the initial interview plan, conducting the majority of the interviews, processing the data, and writing the first draft of the article which was substantially condensed and improved by my supervisor Lea Altnurme. She also guided my choosing of the methods used in collecting and processing the data (e.g. interviewing and qualitative data processing), substantially improved the interview plan, and recruited and interviewed several very interesting respondents. Most of all, she never stopped encouraging me when I encountered doubts and problems related to my work.

5. Ayahuasca in the society

„Vähemusi ei ole mõtet jagada neiks, kes väärivad ühiskonna toetust ja neiks, kes seda justkui vähem vääriskid. Igaiüks tunneb ennast vahel vähemuses olevana. Aga just teadmine, et su huvidest ja õigustest, su õnnest, ei sõideta üle seepärast, et oled väike mure ühiskonna jaoks, sest sinu suguseid pole ju palju, on heaoluriigi olemus ja tema kodaniku turvatunde ning vabaduse allikas.”³ (Kaljulaid, 2020)

The current position of ayahuasca in Europe and in the world is controversial. The conclusions of the study of chemical composition of ayahuasca, the answers of the participants of the psychological study and of the interview-based study, my observations during fieldwork and personal experience, my critical following of public and social media, and discussions between researchers since 2014 all lend strong support to the conclusion that **the regulation of ayahuasca use in our society is in need of substantial change.**

In this chapter, I present arguments with examples to support this conclusion. I do this within the framework of critical ethnography, in which explicit indication of needs of social change is a norm. Taking into account my researcher position and lived experience, I proceed by “addressing social injustice and inequality through the research process” and “deconstructing taken-for-granted assumptions to uncover the workings of power and control, and advocating for social change” (Allen, 2017). Doing this, I consciously assume goodwill from all relevant parties. Using the words of two US-based autoethnographers from Brazil, Marcelo Diversi and Claudio Moreira, I ask: “How do we get from *Us versus Them* to *just Us*?”, in the “endless search for consensus” (Diversi & Moreira, 2018, pp. 1, 44).

Research does not happen in a vacuum. When receiving data from the community, the researcher is responsible that the information will not be used against the community or misrepresented. By accepting funding from society, the researcher takes the responsibility to produce useful knowledge. Research can point at blind spots of society, at otherwise invisible injustice and unfairness, which due to habituation and social conditioning seems justified and self-evident. Ideally, researchers, elected leaders and legislators should be open to the discovery of unjust laws and hidden discrimination. As they are funded by taxpayers’ money, they should actively work to find and correct such flaws in the society. Unfortunately, this work for social justice is not always done effectively enough. With my study, I did some of this work. I unite my voice with the voices of countless of other researchers in inviting society to look at the large controversy

³ “It makes no sense to divide minorities into those who deserve the support of the society and those who seem to deserve it less. Sometimes, everyone feels themselves in the minority. The knowledge that your interests and rights, your happiness will not be overridden just because you are of little concern to society, because there are not many like you – this is the essence of the welfare state and the source of safety and freedom for its citizen.”

surrounding psychedelics. Here is something real for us to disentangle and make right.

It is often assumed that the situation of freedom of religion is good in Europe. Indeed, community discussions of religious diversity and tolerance often involve someone feeling offended by a wish of “Merry Christmas!”. However, nowadays, in Europe, people who did not harm or endanger anyone are arrested and put on trial for doing nothing more than following their religion (e.g. the current case of *Santo Daime* in France). As a critical researcher, I cannot remain silent about the clear need to draw attention to this unjust discrimination due to its lack of proportionality and the weakness of excuses constructed for it. I saw factual and logical errors, plagiarism and falsification used against believers under trial. I expressed my educated opinion against it, but I can only hope that my input will influence the result of the process.

The prejudice against users of ayahuasca is not limited to the level of authorities, it trickles down to the academy and general public as well. The fallacious logic goes that if they are outlawed, they must be doing something bad. All humans have needs and some impact on the world, but for marginalized groups, their needs often get dismissed and their negative impacts exaggerated. For example, at a conference, after I presented my work, a young lady stood up and told with certainty that whatever ailed the participants of my psychological study could be easily cured with meditation. It is hard to see why such a sweeping statement should apply exclusively to ayahuasca users while health problems of the rest of the humanity still deserve individual medical attention and treatment. She was also concerned by the social and ecological impact of their “*cup of tea*”. She said they should at least be aware of where it comes from and its impact on the environment. During the coffee break, I asked her about the origin and environmental effect of her cup of coffee. As expected, she had no idea where it came from or how it was produced. Having been at *feitio*, I know that production of the *Santo Daime* sacrament is mostly manual work which does not involve agrochemicals, large-scale destruction of natural habitats, fossil-fuel-consuming heavy machinery, nor exploitation of disadvantaged groups. Can we be sure that the same is true about coffee industry? Indeed, everyone has an environmental footprint. Even a vegan who does not own a car emits some CO₂. However, and when judging disadvantaged groups, the risks and impacts of their socially stigmatized practices (e.g. use of ayahuasca) become exaggerated out of all proportion when compared to risks and impacts of socially accepted psychoactives (e.g. coffee, tobacco or alcohol). Ample published scientific evidence about the risk levels is ignored. Single accidents, often poorly referenced and sometimes even unrelated to ayahuasca, are used as excuses for legal discrimination of ayahuasca users. The challenges and the problems of the stigmatized group become trivialized or denied: just meditate (or take your pills) and obey the law. This occurs not only in mainstream public discourse but in legislative practice and legal cases as well.

The assumption of a just world creates an illusory feeling of control and simplifies the worldview. It hides such scary dangers as treatment-resistant disease,

unjust laws, abuse of power without responsibility and systemic violence from our mental view. However, victim-blaming cannot actually eliminate those dangers. It is an illusory unilateral deal of the inner child with the parent archetype: if I obey and behave, you keep me out of trouble. However, bad things keep happening to good people. In order to keep the illusion of a just world, its believer has to mitigate the cognitive dissonance by either denying or justifying the bad. Protection of the illusion of a just world by denial, belittling and victim-blaming continues until the trouble strikes near, and even after that, it continues for any slightly different trouble. Even the mind that is *expanded* by psychedelics can have a surprisingly narrow “bandwidth of compassion” around their specific *medicine* of choice and mode of its use. Users of psychedelics, sharing their scapegoat status with users of outlawed stimulants and relaxants such as cocaine, amphetamine and opiates, similarly dismiss the problems and suffering of the users of such drugs. “Just take some *natural medicine* instead of the bad drugs, and if it does not help, take more”. In ayahuasca forums, opponents in a dispute often advise each other to “drink more” under the assumption that who still thinks differently has not learned enough from the plants. When someone tells a story of a difficult experience with ayahuasca or unintended consequences from it, advice to “drink again”, “drink more” and “drink with us” inevitably appears. Belief in ayahuasca as a sweeping solution to all human suffering is an illusion equally to a belief into any other panacea. This illusion seems to be resistant to ayahuasca itself, which is otherwise quite effective in dissolving illusions. However, experienced users acknowledge that ayahuasca may show the way, but we have to walk the way to make changes happen.

Entheogens can be seen as assisting devices for spiritually challenged people. Some people need eyeglasses to see or hearing aids to hear. Similarly, some people need external aids such as some “glasses” to open their spirituality. We, as a society, recognize spirituality as a normal and healthy part of human life. It is a need and a right. We recognize people with disabilities as equally valuable, deserving special support and necessary adaptations. Therefore, we should not discriminate against people who need some special support for discovering and activating their spiritual potential.

Knowledge in itself, when published, can dissipate prejudice and the fear of the unknown. However, due to stigmatization and the danger of persecution, most users choose not to share their knowledge about ayahuasca outside of a circle of trusted friends. It may be culturally and emotionally enriching to have a real spiritual secret – moreover, a secret and endangered spiritual confraternity – in the world where information about spirituality is not only public but actively sold. However, by having to hide, ayahuasca users are rendered silent and invisible in society, and they are at least partially alienated from it. Under protection of anonymity and confidentiality, research can make their existence recognized and their voices heard. As a conventional researcher, I condense and systematize the collected data, find meaningful patterns in it and publish articles whilst trying to remain as objective and transparent as possible. However, researchers are humans and all research is subjective. At least during the interpretation of the research

results, most researchers subjectively prefer health over disease, benefits over harm, and safety over danger. Here, as a critical autoethnographer, I go further into subjectivity. I collect the voices of the participants, and as one of them, add my own unmediated voice beside their messages. Simultaneously, and as a reflexive researcher, I remain critical of shared “self-evident” assumptions in beliefs and practices of user communities as well as in the mainstream discourse about ayahuasca.

Research (including my Articles II, III and IV) has shown that a large majority of studied ayahuasca users suffer no damage from ayahuasca (see e.g. Bouso et al., 2012). According to clinical criteria, no abuse of ayahuasca nor addiction to it was found among the 30 users of my psychological study. On the contrary, they reported various benefits. However, the use of ayahuasca involves certain risks (e.g. adulteration and falsification of the brew, arbitrary dosing, undetected or ignored contraindications, irresponsible facilitation and even abuse of participants). Such risks are not mitigated but enhanced by prohibition and legal uncertainty, and then paradoxically these risks are used to justify prohibition and persecution. When these risks actualize and lead to harm, both mainstream and community attitudes may become obstacles to getting help. To counterbalance the overall positive picture reflected in the reports of users, and with the practical usefulness of my work in mind, in this subchapter I consciously draw special attention to some critical and controversial aspects of the current practices. Here I pay less attention to enjoyable and beneficial experiences just because there is no need for safety precautions against bliss and healing. However, it is helpful to be warned and prepared against potential problems. In the following, I present some examples about what may go wrong between mainstream society, the user community and individual users.

Outlawing *Santo Daime* in the Netherlands was exceptional in legal and religious practice. I am not aware of any (predictive or retrospective) research, other than this autoethnographical narrative, to describe or assess the impact of the decision to the members of the affected communities. What should believers do if their religion is outlawed by the state? In the end of the 1980s, I visited meetings of a Pentecostal congregation in Tallinn when this religious movement was prohibited under Soviet rule. I did not see any reason to prohibit what I saw there. Similarly, I see no reason to prohibit anything that I have seen in *Santo Daime* during my more than ten years of participation. After the prohibition, these hundreds of people did not magically disappear. Were they expected to emigrate to Brazil, obediently abandon their religion following a state order, or thank God for the honour to suffer for their faith and pray for their persecutors? Even if it were possible to change someone’s religion by threat of legal action, it would still be unethical and irrational in a society that claims to value cultural diversity and evidence-based decision-making.

When exotic pets were outlawed in the Netherlands in 2015, it was decided that “owners of prohibited species can keep their animals until they die” (ENDCAP, 2015). No comparable period of grace was given to the prohibited religion; it was expected to die overnight. It did not.

However disruptive and devastating for local and European Daimic communities, the court order was still a small event in the global ayahuasca scene. Even the current pandemic of coronavirus has not stopped the global ayahuasca business (although a part of it has been replaced by the business of soliciting emergency donations, allegedly for indigenous groups). Facilitators in the Netherlands limited their publicly advertised retreat locations to places where the use of ayahuasca is permitted, switched to substitutes (e.g. made from “magic truffles” that contain psilocybin and are legally sold in Netherlands), or stopped labelling whatever they offer to their clients as “ayahuasca” – and increased prices to cover the increased risk.

The global ayahuasca boom is going on. The internet is full of advertisements of expensive retreats with ayahuasca sessions, flower baths, yoga, “detox” and whatever can be sold to a wealthy *gringo* (white westerner)⁴. Even when the retreat organizer hires indigenous healers, these healers are usually not able to select their clients, prescribe them different treatments than those expected by the clients, or otherwise determine the rules of the service. Although relatively well paid and naïvely revered by many clients, they are kept in a “golden cage”, “*trip sitting*” the wealthy strangers that flow through the retreat centre instead of healing their own people. Their clients have mixed motivations: many are looking for healing and help, some may be attracted by unrealistic hopes amplified by advertisements whilst others may be looking for their next adventure. Under the disguise of a healing session, psychedelic “space tourism” may occur, with both clients and facilitators playing along without much concern for the client’s health. The role of the traditional ceremonial leader with their deep wisdom and experience is often tokenized or dismissed altogether. Moreover, after visiting a couple of ceremonies and multiplying the participation fee by the number of participants, people with ambition and entrepreneurial spirit may feel called to become “shamans”. This popular demand is exploited by facilitators who offer expensive “shamanic initiation courses”. There, after six to eight weeks of participation in ceremonies, aspiring shamans don Shipibo-style robes, ready to start healing humankind and the Earth. For comparison, in the Soviet time it took six months to become a trolleybus driver.

Clearly, a patient cannot become a medical doctor by observing the treatments performed on her or him. It would not be possible to become a physicist just by observing and imitating a physicist at work. Similarly, it is equally impossible to become a spiritual healer by just observing a healer at work and imitating him according to the observer’s limited understanding of the process; especially if the observed practitioner had “trained” in a similar way. This is a cargo cult in reverse. Western ayahuasca ceremonies may even have lost their main functional core that existed in traditional use, just like airplanes made of grass cannot fly. However, many participants receive strong experiences and subjective benefits. Advertisements present ayahuasca as a miraculous panacea and the facilitators as

⁴ References omitted on purpose, to avoid the possibility that some readers interpret these as recommendations.

superhumans. Therefore, neoshamanic rituals keep multiplying and diversifying. Even education and research on this topic (including unintentionally this thesis) may somewhat contribute to this boom.

If the *medicine*, its dose and the ceremonial environment happen to be safe, and there are no serious contraindications, the participants may have interesting and beneficial experiences. However, if these conditions are not fulfilled, using such a service may result in disappointment or even in emotional, financial or sexual abuse. For example, marketing proposals like “bring three paying clients, get the next retreat free” are offered to clients of a retreat immediately after drinking for several nights in a row. Even worse, this offer is tied to the commitment to pay the exorbitant price again in case the recruitment (which may seem easy in the post-ceremony afterglow) does not succeed during the predefined time. These desperate contractors head to social media where they write anything to lure the next clients to the retreat, only to avoid paying again for the overpriced retreat that tricked them into that situation.

Some commercial ayahuasca providers disguise themselves as churches while advertising their services on the Internet. They ask for large “donations” and “membership fees” for participation in the “services” whilst misleading potential clients about the legality of their activity. To sum up, the global ayahuasca business is a wild jungle, and it is not safe to explore it without proper preparation.

Public advertising of ceremonies in countries where they are not explicitly legal is a clear sign of greed exceeding caution, and, therefore, for those who know the scene it works as a contra-recommendation. The worse the service and their reputation is among previous clients, the more they have to advertise to fill the places. Consequently, **the more they advertise, the worse their service is**. Not a single one of the few European facilitators with whom I would drink has to advertise their services to the public. On the contrary, the demand for their services is high without any advertisements, and they have to select their clients to provide as much help as they can. However, when a potential first-time user who does not have access to safe guidance (e.g. from experienced and ethical practitioners) searches the Internet for ayahuasca, they will mostly find the services of unsafe and unethical providers. These questionable providers are forced to advertise publicly even during the current ayahuasca boom due to their high prices and/or bad service despite the associated legal risks. Therefore, and paradoxically, **first-timers who need the best care end up with the worst providers**. If they find you instead of you finding them, they may need you more than you need them.

There are known contraindications to ayahuasca such as predisposition to psychosis, very frail physical health and use of certain medications (Londoño et al., 2019). Responsible facilitators interview their prospective participants about possible contraindications, and they do not serve ayahuasca to whom they cannot offer a safe service. However, what will happen to those people with contraindications to whom responsible facilitators had denied the dose? They learn to avoid mentioning their contraindications and seek other providers who

ask for nothing more than money. Again, **the people who need the best care end up with the worst providers.**

Illegal business attracts risk-prone adventurers who do not mind overstepping boundaries to get what they want. Such a mind-set is different from that of a good healer or spiritual guide. It is unclear what “healing properties” these practitioners offer and what potions they serve. Substitutes of the traditional plants are used without informing the participants of the substitution. The most common analogues are seeds of Syrian rue (*Peganum harmala*) and rootbark of jurema (*Mimosa tenuiflora*). Sometimes other plants or even psychopharmaceuticals are used.

Some facilitators offer multiple sessions with different substances (e.g. *San Pedro* (mescaline-containing cacti), *bufo* (toad venom from “*Bufo alvarius*” (*Incilius alvarius*) (containing 5-MeO-DMT which is not recommended to be combined with ayahuasca (ICEERS Foundation, 2019)), tobacco, *kambo* (bio-active secretions of tree frog *Phyllomedusa bicolor*), psilocybin-containing mushrooms or *iboga*) in a short time interval. Some organizers advertise “warrior retreats” with the use of up to seven such substances squeezed into three days. It should not come as a surprise that serious health incidents at such underground practices have occurred. Reports of such events, amplified and distorted by sensationalist media, are used to label ayahuasca as inherently dangerous, even in cases which did not involve drinking ayahuasca at all. This influences not only public opinion but also ongoing legal processes. “Exaggerated headlines in the press during the Mimosa and ayahuasca prosecutions /.../ substitute evidence and research with sensationalism and scaremongering.” (Hobbs, 2018, p. 53) **Paradoxically, accidents caused by irresponsible use of ayahuasca and other psycho-active substances are used to justify the regime of prohibition under which such incidents occur** (see also Liana, 2019).

I see a solution in reasonably regulating the use of ayahuasca (similarly to other health and wellness services) taking into account the specific indications, contraindications and safety precautions. Although users report a wide range of subjective benefits, the scientific evidence for the therapeutic potential of ayahuasca is limited. Ayahuasca has shown promise to alleviate depression (Palhano-Fontes et al., 2019), anxiety (Santos, Osório, et al., 2016), addictions (Nunes et al., 2016), panic and hopelessness (Santos et al., 2007), minor psychiatric symptoms and physical pain (Barbosa et al., 2009). Alkaloids contained in ayahuasca were found to stimulate neurogenesis (Morales-Garcia et al., 2017). Use of ayahuasca was found (more likely than use of psilocybin or LSD) to lead to subjective “God encounter experiences” with positive outcomes that were spiritually significant and increased “life satisfaction, social relationships, spiritual awareness in everyday life, attitudes about life and self, mood, and behaviour” (Griffiths et al., 2019). Long-term ayahuasca use was “associated with enhanced mood and cognition, increased spirituality, and reduced impulsivity” (Santos, Balthazar, et al., 2016). The list goes on and is growing as research continues. Analysis of collected experiences of healings and other benefits may point to new therapeutic applications of ayahuasca. Which part of

these subjective observations present as sufficiently frequent, large and robust to warrant controlled experimental studies? Can ayahuasca really heal autoimmune and respiratory diseases? Does the joint pain really leave when the patient has recognized and accepted its message with the help of *the plant*? Does the brew really help the tone-deaf to sing in tune during the ceremonies, or they just feel so under the influence? Such questions can be formalized and rigorously studied. In conditions of limited resources for research, the field of ayahuasca research could benefit from a synchronized dynamical roadmap of research plans and priorities.

However, no medicine is equally good for everything and for everyone. Each medicine has contraindications. Risks increase when the dose and purity are unknown and the procedures are unregulated. Outlawing entheogen use suppresses culturally established and safely self-regulated, more traditional and law-abiding forms of it. This results in the market shifting in favour of unregulated profit-motivated actors who may neglect reasonable rules of safety and ethics as well as the law. Moreover, people who are persecuted for their spiritual practice may lose trust in the legislative and judicial system, and in the state. They become disappointed in society and feel alienated from it. They may become more susceptible to misinformation and conspiracy theories, and less cooperative with the rest of society. For example, they may distrust healthcare, research, education or digitalization as parts of the system that represses them. Pushing harmless people to the edge of society with a constant fear of prosecution just because their spiritual practice is different from that of the majority has a price not only for the persecuted group, but also for the whole of society.

Suppressing safer practices in favour of less safe ones, prohibition also hinders scientific research. Despite these obstacles, there are legal ways to study the use of ayahuasca when it is not explicitly legal. However, prejudice and stigma that accompany prohibition make it unlikely to become chosen as a research topic, and the research is less likely to be funded and published. Strangely, many people seem unable to distinguish a persecuted practice from research about it, and they wrongly assume that if a substance is illegal then it must also be illegal, or at least unethical, to study its use or disseminate the results.⁵ The stigma around “forbidden substances” is so contagious that I have received several well-intentioned recommendations to avoid studying the topic in order to avoid legal trouble.

The basis of uninformed prejudice is a real legal concern. Ayahuasca usually contains around 0.1% of psychedelic DMT, which is also present in small quantities in many plants and animals (including humans). DMT is in Schedule I of the “List of Psychotropic Substances under International Control” (International Narcotics Control Board, 2020, p. 5) and in the Estonian national list of narcotic and psychotropic substances (Sotsiaalministeerium, 2021, p. 6). However, according to the United Nations International Narcotics Control Board, “no plant (natural materials) containing DMT is currently controlled under the 1971

⁵ Interestingly, this strange implicit assumption would probably not be applied to research about heroin users or serial killers.

Convention on Psychotropic Substances. Consequently, preparations (e.g. decoctions) made of these plants, including ayahuasca are not under international control and, therefore, not subject to any of the provisions of the 1971 Convention.” (Lucas, 2010).

Ayahuasca or its constituent plants are not on the list of controlled substances in Estonia (Sotsiaalministeerium, 2021), and, to the best of my knowledge, there have been no court cases about ayahuasca in Estonia. However, there have been court cases against ayahuasca users in other countries in Europe (e.g. in France, Spain, the Netherlands, Belgium, Lithuania and the UK).

Among the 60 interviews conducted for the study described in Article IV, and in addition to the usual healing, spiritual, problem solving and exotic travel experiences, there were less common stories of strange and even traumatic experiences. As result of legal pressure, sharing of such stories is suppressed in the community. However, it is crucial to explore and acknowledge risks of ayahuasca use and enable help for those who need it. Many of the incidents are enabled or amplified by the current “regulation” of the topic in society. The situation could be mitigated by measures of harm reduction, self-regulation, free flow of information and education among users and facilitators. Work in this direction is being conducted by international research and activism organizations including the International Center for Ethnobotanical Education, Research and Service (ICEERS, iceers.org), Council on Spiritual Practices (csp.org), Chacruna Institute for Psychedelic Plant Medicines (chacruna.net) with its Sacred Plant Alliance, Multidisciplinary Association for Psychedelic Studies (MAPS, maps.org) and many others. Due to the rise of psychedelic activism and the current renaissance in psychedelic research (Richert, 2019), there is hope for more reasonable regulation in the coming decades.

Decisions about regulation of spiritual practices of the cultural minority of ayahuasca users should be based on scientific evidence and culturally sensitive dialogue with experts in the field. These discussions should also include those who have the best practical knowledge of the real situation in the field and who are most affected by the outcome of the dialogue – the users ourselves.

REFERENCES*

- Adelaars, A. (1999). *Erowid Ayahuasca Vault: Dutch Ayahuasca Church Raided, Leaders Arrested*. October 1999.
https://erowid.org/chemicals/ayahuasca/ayahuasca_law3.shtml
- Allen, M. (2017). *The SAGE Encyclopedia of Communication Research Methods*. Thousand Oaks, California: SAGE Publications, Inc.
<https://doi.org/10.4135/9781483381411>
- Anderson, B. (2011). *Classifying Ayahuasca: The Role of Subjective Experience in Psychiatric Research with Psychedelics* [Master's thesis]. London: London School of Economics.
- Anderson, B. T. (2012). Ayahuasca as antidepressant? Psychedelics and styles of reasoning in psychiatry. *Anthropology of Consciousness*, 23(1), 44–59.
<https://doi.org/10.1111/j.1556-3537.2012.01056.x>
- Antunes, H. f. (2019). Drugs, religion, and cultural heritage: An analysis of the public policies regarding the use of ayahuasca in Brazil. *International Journal of Religion and Spirituality in Society*, 9(1), 29–39.
<https://doi.org/10.18848/2154-8633/CGP/V09I01/29-39>
- Apud, I. (2017). Science, spirituality, and ayahuasca: The problem of consciousness and spiritual ontologies in the academy. *Zygon*, 52(1), 100–123.
<https://doi.org/10.1111/zygo.12315>
- Apud, I., & Romani, O. (2017). Medicine, religion and ayahuasca in Catalonia. Considering ayahuasca networks from a medical anthropology perspective. *International Journal of Drug Policy*, 39, 28–36. <https://doi.org/10.1016/j.drugpo.2016.07.011>
- Araujo, D., Ribeiro, S., Cecchi, G., Carvalho, F., Sanchez, T., Pinto, J., Martinis, B., Crippa, J., Hallak, J., & Santos, A. (2012). Seeing with the eyes shut: Neural basis of enhanced imagery following ayahuasca ingestion. *Human Brain Mapping*, 33(11), 2550–2560. <https://doi.org/10.1002/hbm.21381>
- Assis, G. L. de, & Labate, B. C. (2017). The religion of the forest: Reflections on the international expansion of a Brazilian ayahuasca religion. In *The World Ayahuasca Diaspora* (pp. 57–76). Routledge. <https://doi.org/10.4324/9781315551425-10>
- Balzer, C. (2005). Ayahuasca rituals in Germany: The first steps of the Brazilian Santo Daime religion in Europe. *Curare – Journal for Medical Anthropology and Transcultural Psychiatry*, 28(1), 53–66.
- Barbosa, P. C. R., Cazorla, I. M., Giglio, J. S., & Strassman, R. (2009). A six-month prospective evaluation of personality traits, psychiatric symptoms and quality of life in ayahuasca-naïve subjects. *Journal of Psychoactive Drugs*, 41(3), 205–212.
<https://doi.org/10.1080/02791072.2009.10400530>
- Barbosa, P. C. R., Mizumoto, S., Bogenschutz, M. P., & Strassman, R. J. (2012). Health status of ayahuasca users. *Drug Testing and Analysis*, 4(7–8), 601–609.
<https://doi.org/10.1002/dta.1383>
- Barbosa, P. C. R., Strassman, R. J., da Silveira, D. X., Areco, K., Hoy, R., Pommy, J., Thoma, R., & Bogenschutz, M. (2016). Psychological and neuropsychological assessment of regular hoasca users. *Comprehensive Psychiatry*, 71, 95–105.
<https://doi.org/10.1016/j.comppsy.2016.09.003>

* Web links in references (excluding “doi” links) were verified on 30.06.22.

- Barnard, G. W. (2014). Entheogens in a religious context: The case of the Santo Daime religious tradition. *Zygon*, 49(3), 666–684. d <https://doi.org/10.1111/zygo.12109>
- Bauchet, C. (2019). *Solidarité Santo Daime France*. gofundme. <https://www.gofundme.com/f/santodaimefrance>
- Bomfim, J. D. (2008). *Trabalho Material & Trabalho Espiritual—O Feitio de Daime*. Portal do Santo Daime. http://portalsantodaime.com.br/artigo_especifico.php?idartigo=302&idautor=78
- Bouso, J. C., González, D., Fondevila, S., Cutchet, M., Fernández, X., Ribeiro Barbosa, P. C., Alcázar-Córcoles, M. Á., Araújo, W. S., Barbanoj, M. J., Fábregas, J. M., & Riba, J. (2012). Personality, psychopathology, life attitudes and neuropsychological performance among ritual users of ayahuasca: A longitudinal study. *PLoS ONE*, 7(8), e42421. <https://doi.org/10.1371/journal.pone.0042421>
- Bouso, J. C., & Riba, J. (2011). An overview of the literature on the pharmacology and neuropsychiatric long term effects of ayahuasca. In *The Ethnopharmacology of Ayahuasca* (ed. R. G. dos Santos, pp. 55–63).
- Bouso, J. C., Santos, R. G. dos, Sánchez Avilés, C., Oña, G., Grob, C. S., Silveira, D. X. da, McKenna, D. J., Araújo, D. B. de, Riba, J., Barbosa, P. C. R., & Labate, B. C. (2021). *Ayahuasca Technical Report 2021*. International Center for Ethnobotanical Education, Research and Service (ICEERS). https://www.iceers.org/wp-content/uploads/2020/05/Ayahuasca_Technical_Report_ICEERS_2021_ENG.pdf
- Callaway, J. C. (1999). Phytochemistry and neuropharmacology of ayahuasca. In *Ayahuasca: Hallucinogens, Consciousness, and the Spirit of Nature* (Ed. Metzner, Ralph, pp. 250–275). New York: Running Press.
- Callaway, J. C. (2005). Various alkaloid profiles in decoctions of *Banisteriopsis caapi*. *Journal of Psychoactive Drugs*, 37(2), 151–155.
- Callaway, J. C. (2006). Phytochemistry and neuropharmacology of ayahuasca. In *Sacred vine of spirits: Ayahuasca* (Ralph Metzner, ed., pp. 94–116). Rochester, Vermont; Park Street Press.
- Callaway, J. C., Brito, G. S., & Neves, E. S. (2005). Phytochemical analyses of *Banisteriopsis caapi* and *Psychotria viridis*. *Journal of Psychoactive Drugs*, 37(2), 145–150. <https://doi.org/10.1080/02791072.2005.10399795>
- Callaway, J. C., McKenna, D. J., Grob, C. S., Brito, G. S., Raymon, L. P., Poland, R. E., Andrade, E. N., Andrade, E. O., & Mash, D. C. (1999). Pharmacokinetics of Hoasca alkaloids in healthy humans. *Journal of Ethnopharmacology*, 65(3), 243–256. [https://doi.org/10.1016/S0378-8741\(98\)00168-8](https://doi.org/10.1016/S0378-8741(98)00168-8)
- Dawson, A. (2013a). Making Matter Matter: The Santo Daime Ritual of Feitio. In *Making Spirits: Materiality and Transcendence in Contemporary Religions* (Ed. D. Espírito Santo, N. Tassi, pp. 229–251). I.B.Tauris & Co Ltd.
- Dawson, A. (2013b). *Santo Daime: A New World Religion* (1st edition). London: Bloomsbury Academic Press.
- Dawson, A. (2017). Brazil's ayahuasca religions: Comparisons and contrasts. In B. E. Schmidt & S. Engler (Eds.), *Handbook of Contemporary Religions in Brazil* (Brill Handbooks on Contemporary Religion Vol. 13), pp. 233–252. Leiden: Brill.
- Diversi, M., & Moreira, C. (2018). *Between Autoethnographies: A Path Towards Social Justice*. New York and London, Routledge.
- Domínguez-Clavé, E., Soler, J., Elices, M., Pascual, J. C., Álvarez, E., de la Fuente Revenga, M., Friedlander, P., Feilding, A., & Riba, J. (2016). Ayahuasca: Pharmacology, neuroscience and therapeutic potential. *Brain Research Bulletin*, 126 (1), 89–101. <https://doi.org/10.1016/j.brainresbull.2016.03.002>

- Domínguez-Clavé, E., Soler, J., Pascual, J. C., Elices, M., Franquesa, A., Valle, M., Alvarez, E., & Riba, J. (2019). Ayahuasca improves emotion dysregulation in a community sample and in individuals with borderline-like traits. *Psychopharmacology*, *236*(2), 573–580.
- Ellis, C., & Adams, T. E. (2014). The Purposes, Practices, and Principles of Auto-ethnographic Research. In *The Oxford Handbook of Qualitative Research* (Ed. Patricia Leavy). pp. 254–276. Oxford: Oxford University Press.
- ENDCAP (2015). *Restriction on Exotic Pets in the Netherlands*. ENDCAP. <https://endcap.eu/restriction-on-exotic-pets-in-the-netherlands/>
- Frenopoulo, C. (2005). *Charity and spirits in the Amazonian navy: The Barquinha mission of the Brazilian Amazon*. [M.A. thesis, University of Regina]. <http://evols.library.manoa.hawaii.edu/handle/10524/1518>
- Gable, R. S. (2007). Risk assessment of ritual use of oral dimethyltryptamine (DMT) and harmala alkaloids. *Addiction*, *102*(1), 24–34. <https://doi.org/10.1111/j.1360-0443.2006.01652.x>
- Gaujac, A., Dempster, N., Navickiene, S., Brandt, S. D., & Andrade, J. B. de. (2013). Determination of N,N-dimethyltryptamine in beverages consumed in religious practices by headspace solid-phase microextraction followed by gas chromatography ion trap mass spectrometry. *Talanta*, *106*, 394–398. <https://doi.org/10.1016/j.talanta.2013.01.017>
- Griffiths, R. R., Hurwitz, E. S., Davis, A. K., Johnson, M. W., & Jesse, R. (2019). Survey of subjective “God encounter experiences”: Comparisons among naturally occurring experiences and those occasioned by the classic psychedelics psilocybin, LSD, ayahuasca, or DMT. *PLOS ONE*, *14*(4), e0214377. <https://doi.org/10.1371/journal.pone.0214377>
- Grob, C. S., McKenna, D. J., Callaway, J. C., Brito, G. S., Neves, E. S., Oberlaender, G., Saide, O. L., Labigalini, E., Tacla, C., Miranda, C. T., Strassman, R. J., & Boone, K. B. (1996). Human psychopharmacology of hoasca, a plant hallucinogen used in ritual context in Brazil. *Journal of Nervous and Mental Disease*, *184*(2), 86–94. <https://doi.org/10.1097/00005053-199602000-00004>
- Hanegraaff, W. J. (2011). Ayahuasca Groups and Networks in the Netherlands: A Challenge to the Contemporary Study of Religion. In *The Internationalization of Ayahuasca* (Ed. B.C. Labate & H. Jungaberle), pp. 85–103. Zürich/Berlin: Lit Verlag.
- Hanegraaff, W. J. (2012). *Esotericism and the Academy: Rejected Knowledge In Western Culture*. Cambridge: Cambridge University Press.
- Hartogsohn, I. (2017). Constructing drug effects: A history of set and setting. *Drug Science, Policy and Law*, *3*, 2050324516683325. <https://doi.org/10.1177/2050324516683325>
- Hartogsohn, I. (2021). Set and setting in the Santo Daime. *Frontiers in Pharmacology*, *12*. <https://doi.org/10.3389/fphar.2021.651037>
- Headland, T. N. (1990). *Emics and Etics: The Insider/Outsider Debate*. https://scholars.sil.org/thomas_n_headland/controversies/emic_eti/introduction
- Hobbs, J. (2018). “Altered by the hand of man”: Contextualizing ayahuasca law in Britain and Europe. In *The Expanding World Ayahuasca Diaspora: Appropriation, Integration and Legislation* (Ed. B. C. Labate, C. Cavnar), pp. 40–60. London and New York: Routledge.
- Hoge Raad. (2019, October 1). *ECLI:NL:HR:2019:1456, Hoge Raad, 18/01356*. <https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:HR:2019:1456>

- ICEERS (2019). *Ayahuasca and Religious Freedom in the Dutch Courts: From Tolerance to Intolerance*. January 25, 2019. <https://www.iceers.org/ayahuasca-and-religious-freedom-in-the-dutch-courts-from-tolerance-to-intolerance/>
- ICEERS Foundation. (2019). *Risks Associated with Combining Bufo alvarius with Ayahuasca*. May 30, 2019. <https://www.iceers.org/risks-associated-with-combining-bufo-alvarius-with-ayahuasca/>
- Inserra, A. (2018). Hypothesis: the psychedelic ayahuasca heals traumatic memories via a sigma 1 receptor-mediated epigenetic-mnemonic process. *Frontiers in Pharmacology*, 9. <https://doi.org/10.3389/fphar.2018.00330>
- International Narcotics Control Board. (2020). *List of Psychotropic Substances under International Control*. INCB. http://www.incb.org/documents/Psychotropics/forms/greenlist/Green_list_ENG_V20_03594.pdf
- James, W. (2014). *The Varieties of Religious Experience*. <https://www.gutenberg.org/files/621/621-h/621-h.html#toc23>
- Jiménez-Garrido, D. F., Gómez-Sousa, M., Ona, G., dos Santos, R. G., Hallak, J. E. C., Alcázar-Córcoles, M. Á., & Bouso, J. C. (2020). Effects of ayahuasca on mental health and quality of life in naïve users: A longitudinal and cross-sectional study combination. *Scientific Reports*, 10(1), 4075. <https://doi.org/10.1038/s41598-020-61169-x>
- Kaasik, H. (2016). *Eesti ayahuasca tarvitajate psüühika [Psychology of ayahuasca users in Estonia]* [Master's thesis, University of Tartu]. <http://kodu.ut.ee/~hellex/aya>
- Kaasik, H. (2019). Ayahuasca rituaalne kasutamine Eestis. *Usuteaduslik Ajakiri*, 75(2), 118–146. [https://usuteadus.ee/wp-content/uploads/2019_2%20\(75\)/Kaasik.pdf](https://usuteadus.ee/wp-content/uploads/2019_2%20(75)/Kaasik.pdf)
- Kaasik, H., & Altnurme, L. (2021). Enteogeenne esoteerika ayahuasca kasutajate kogukonnas [Entheogenic esotericism in the community of ayahuasca users]. In: *Mitut usku Eesti V. Esoteerika* (pp. 135–160). Tartu: Tartu Ülikooli Kirjastus.
- Kaasik, H., & Kreegipuu, K. (2020). Ayahuasca users in Estonia: ceremonial practices, subjective long-term effects, mental health, and quality of life. *Journal of Psychoactive Drugs*, 52(3), 255–263. <https://doi.org/10.1080/02791072.2020.1748773>
- Kaasik, H., Souza, R. C. Z., Zandonadi, F. S., Tófoli, L. F., & Sussulini, A. (2021). Chemical composition of traditional and analog ayahuasca. *Journal of Psychoactive Drugs*, 53(1), 65–75. <https://doi.org/10.1080/02791072.2020.1815911>
- Kaljulaid, K. (2020, September 14). *Kersti Kaljulaid: Midagi on lahti meie suure pildi tajuga*. ERR. <https://www.err.ee/1134790/kersti-kaljulaid-midagi-on-lahti-meie-suure-pildi-tajuga>
- Karo, R. (2009). *Eros & Mysticism: Are Mystical States of Consciousness Evolutionary Byproducts of Sexual Response?* [Doctoral thesis, University of Tartu]. <https://dspace.ut.ee/handle/10062/11012>
- Laanoja, J. (2021). *Bioactive Components in Ayahuasca – Comparison of Detection Methods* [Master's thesis]. Tallinn: Tallinn University.
- Labate, B. C. (2011). Consumption of ayahuasca by children and pregnant women: Medical controversies and religious perspectives. *Journal of Psychoactive Drugs*, 43(1), 27–35. <https://doi.org/10.1080/02791072.2011.566498>
- Labate, B. C., & Cavnar, C. (Eds.). (2018). *The Expanding World Ayahuasca Diaspora: Appropriation, Integration and Legislation* (1 edition). London, New York: Routledge.
- Labate, B. C., Cavnar, C., & Gearin, A. K. (Eds.). (2017). *The World Ayahuasca Diaspora: Reinventions and Controversies*. London: Taylor & Francis, Routledge.

- Labate, B. C., & de Assis, G. L. (2018). A critical review of the literature on the diaspora of Brazilian ayahuasca religions. In B. C. Labate & C. Cavnar (Eds.), *The Expanding World Ayahuasca Diaspora: Appropriation, Integration and Legislation*. London, New York: Routledge.
- Labate, B. C., & Jungaberle, H. (2011), eds. *The Internationalization of Ayahuasca*. Zürich/Berlin: Lit Verlag.
- Labate, B. C., & Pacheco, G. (2011). The historical origins of Santo Daime: Academics, adepts, and ideology. In *The Internationalization of Ayahuasca* (Ed. B.C. Labate & H. Jungaberle) pp. 71–84. Zürich/Berlin: Lit Verlag.
- Liana, L. (2019, October 4). The fragile legality of ayahuasca. *EntheoNation*.
<https://entheonation.com/blog/fragile-legality-ayahuasca/>
- Lieber, M. B., & Prickett, J. I. (2012). Hypotheses regarding the mechanisms of ayahuasca in the treatment of addictions. *Journal of Psychoactive Drugs*, 44(3), 200–208.
<https://doi.org/10.1080/02791072.2012.704590>
- Londoño, D., Mazarrasa, J., & Aixalà, M. B. (2019). *Towards better ayahuasca practices: A guide for organizers and participants*. ICEERS Foundation. http://drogues.gencat.cat/web/.content/minisite/drogues/noticies/pdf/Guia-ayahuasca_eng_30.09.19.pdf
- Lowell, J. T., & Adams, P. C. (2017). The routes of a plant: Ayahuasca and the global networks of Santo Daime. *Social & Cultural Geography*, 18(2), 137–157.
<https://doi.org/10.1080/14649365.2016.1161818>
- Lucas, J. (2010). *INCB-PSY 151/10*. United Nations International Narcotics Control Board. http://iceers.org/Documents_ICEERS_site/Letters/INCB/INCB_Response_Inquiry_ICEERS_Ayahuasca_2010.pdf
- MacLean, K. A., Leoutsakos, J.-M. S., Johnson, M. W., & Griffiths, R. R. (2012). Factor analysis of the mystical experience questionnaire: A study of experiences occasioned by the hallucinogen psilocybin. *Journal for the Scientific Study of Religion*, 51(4), 721–737. <https://doi.org/10.1111/j.1468-5906.2012.01685.x>
- MacRae, E. (1992). *Guided by the moon – Shamanism and the Ritual Use of Ayahuasca in the Santo Daime Religion in Brazil (e-book)*.
<http://www.neip.info/downloads/edward/acks.htm>
- Mayring, P. (2000). Qualitative content analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 1(2). <https://doi.org/10.17169/fqs-1.2.1089>
- Mayring, P. (2014). *Qualitative content analysis: Theoretical foundation, basic procedures and software solution*. SSOAR Open Access Repository.
<https://nbn-resolving.org/urn:nbn:de:0168-ssoar-395173>
- McIlhenny, E. H., Pipkin, K. E., Standish, L. J., Wechkin, H. A., Strassman, R., & Barker, S. A. (2009). Direct analysis of psychoactive tryptamine and harmala alkaloids in the Amazonian botanical medicine ayahuasca by liquid chromatography-electrospray ionization-tandem mass spectrometry. *Journal of Chromatography A*, 1216(51), 8960–8968. <https://doi.org/10.1016/j.chroma.2009.10.088>
- McKenna, D. J., Callaway, J. C., & Grob, C. S. (1998). The scientific investigation of ayahuasca – a review of past and current research. *The Heffter Review of Psychedelic Research*, 1. <http://www.neip.info/downloads/Sci-Inv%20of%20aya-HR-DJMk.pdf>
- MIMS. (2021). *Consumer medicine information. Aurorix. Moclobemide*. NPS MedicineWise. <https://www.nps.org.au/medicine-finder/aurorix-tablets>
- Morales-Garcia, J. A., de la Fuente Revenga, M., Alonso-Gil, S., Isabel Rodriguez-Franco, M., Feilding, A., Perez-Castillo, A., & Riba, J. (2017). The alkaloids of *Banisteriopsis caapi*, the plant source of the Amazonian hallucinogen Ayahuasca, stimulate adult neurogenesis in vitro. *SCIENTIFIC REPORTS*, 7.
<https://doi.org/10.1038/s41598-017-05407-9>

- Müller-Sedgwick, U., Fletcher, P., & Steinberg, H. (2006). The origin of pharmacopsychology: Emil Kraepelin's experiments in Leipzig, Dorpat and Heidelberg (1882–1892). *Psychopharmacology*, *184*, 131–138. <https://doi.org/10.1007/s00213-005-0239-5>
- Murphy-Beiner, A., & Soar, K. (2020). Ayahuasca's 'afterglow': Improved mindfulness and cognitive flexibility in ayahuasca drinkers. *Psychopharmacology*, *237*(4), 1161–1169. <https://doi.org/10.1007/s00213-019-05445-3>
- Nichols, D. E. (2016). Psychedelics. *Pharmacological Reviews*, *68*(2), 264–355. <https://doi.org/10.1124/pr.115.011478>
- Nunes, A. A., dos Santos, R. G., Osório, F. L., Sanches, R. F., Crippa, J. A. S., & Hallak, J. E. C. (2016). Effects of ayahuasca and its alkaloids on drug dependence: a systematic literature review of quantitative studies in animals and humans. *Journal of Psychoactive Drugs*, *48*(3), 195–205. <https://doi.org/10.1080/02791072.2016.1188225>
- Nutt, D. J., King, L. A., & Phillips, L. D. (2010). Drug harms in the UK: A multicriteria decision analysis. *The Lancet*, *376*(9752), 1558–1565. [https://doi.org/10.1016/S0140-6736\(10\)61462-6](https://doi.org/10.1016/S0140-6736(10)61462-6)
- Oorsouw, K. I. van, Uthaug, M. V., Mason, N. L., Broers, N. J., & Ramaekers, J. G. (2021). Sub-acute and long-term effects of ayahuasca on mental health and well-being in healthy ceremony attendants: A replication study. *Journal of Psychedelic Studies*, *5*(2), 103–113. <https://doi.org/10.1556/2054.2021.00174>
- O'Reilly, K. (2009). *Key Concepts in Ethnography*. London: SAGE Publications Ltd. <https://doi.org/10.4135/9781446268308>
- Ott, J. (2001). Pharmañopo-psychonautics: Human intranasal, sublingual, intrarectal, pulmonary and oral pharmacology of bufotenine. *Journal of Psychoactive Drugs*, *33*(3), 273–281. <https://doi.org/10.1080/02791072.2001.10400574>
- Palhano-Fontes, F., Barreto, D., Onias, H., Andrade, K. C., Novaes, M. M., Pessoa, J. A., Mota-Rolim, S. A., Osório, F. L., Sanches, R., dos Santos, R. G., Tófoli, L. F., de Oliveira Silveira, G., Yonamine, M., Riba, J., Santos, F. R., Silva-Junior, A. A., Alchieri, J. C., Galvão-Coelho, N. L., Lobão-Soares, B., ... Araújo, D. B. (2019). Rapid antidepressant effects of the psychedelic ayahuasca in treatment-resistant depression: A randomized placebo-controlled trial. *Psychological Medicine*, *49*(4), 655–663. <https://doi.org/10.1017/S0033291718001356>
- Perkins, D., & Sarris, J. (2021). Ayahuasca and childhood trauma: potential therapeutic applications. In *Ayahuasca Healing and Science* (Eds. B. C. Labate & C. Cavnar), pp. 99–115. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-55688-4_6
- Pikkur, T. (2009, November 11). *Usuteadlane tuvastas müstikakogemuse allika*. Eesti Kirik. <http://www.eestikirik.ee/usuteadlane-tuvastas-mustikakogemuse-allika/>
- Pires, A. P., de Oliveira, C. D., Moura, S., Dörr, F. A., Silva, W. A. E., & Yonamine, M. (2009). Gas Chromatographic Analysis of Dimethyltryptamine and beta-Carboline Alkaloids in Ayahuasca, an Amazonian Psychoactive Plant Beverage. *Phytochemical Analysis*, *20*(2), 149–153. <https://doi.org/10.1002/pca.1110>
- Prado, D. A., Pinto, J., Crippa, J., Santos, A., Ribeiro, S., Araujo, D., Zuardi, A., Chaves, C., & Hallak, J. (2009). Effects of the Amazonian psychoactive plant beverage ayahuasca on prefrontal and limbic regions during a language task: A fMRI study. *European Neuropsychopharmacology*, *19*, S314–S315.

- Raitar, I. (2013, May 13). *Eesti edukad otsivad õnne uimastavast taimest*. Eesti Ekspress. <https://ekspress.delfi.ee/artikkel/66206100/eesti-edukad-otsivad-onne-uimastavast-taimest>
- Reha, A. (2011). *Rituaalsed taimed. Nende toime, kasutamine ja ravipotentsiaal ayahuasca ja iboga näitel. [Ritual plants: The use, effects and therapeutic potential by the example of ayahuasca and iboga]* [Bachelor's thesis. Supervisor: A. Altmets., Euroakadeemia]. http://archive.org/details/Ayahuasca_Iboga_bakalaureusetoo
- Rehen, L. K. F. (2007). "Receber não é compor": Música e emoção na religião do Santo Daime. *Religião & Sociedade*, 27, 181–212. <https://doi.org/10.1590/S0100-85872007000200009>
- Reinfeldt, N. (2011). *Entheogens: Rediscovering and Retooling an Underrepresented Facet in Neurotheology*. [Master's thesis. Supervisor: Roland Karo.]. University of Tartu, Faculty of Theology.
- Riba, J., & Barbanoj, M. J. (2005). Bringing ayahuasca to the clinical research laboratory. *Journal of Psychoactive Drugs*, 37(2), 219–230. <https://doi.org/10.1080/02791072.2005.10399804>
- Riba, J., Rodriguez-Fornells, A., Urbano, G., Morte, A., Antonijoan, R., Montero, M., Callaway, J. C., & Barbanoj, M. J. (2001). Subjective effects and tolerability of the South American psychoactive beverage Ayahuasca in healthy volunteers. *Psychopharmacology*, 154(1), 85–95. <https://doi.org/10.1007/s002130000606>
- Riba, J., Valle, M., Urbano, G., Yritia, M., Morte, A., & Barbanoj, M. J. (2003). Human pharmacology of ayahuasca: Subjective and cardiovascular effects, monoamine metabolite excretion, and pharmacokinetics. *Journal of Pharmacology and Experimental Therapeutics*, 306(1), 73–83. <https://doi.org/10.1124/jpet.103.049882>
- Richert, L. (2019). *The Psychedelic Renaissance*. Psychology Today. <https://www.psychologytoday.com/us/blog/hygieias-workshop/201908/the-psychedelic-renaissance>
- Rios, M. D., & Grob, C. S. (2005a). Ayahuasca use in cross-cultural perspective. *Journal of Psychoactive Drugs*, 37(2), 119–121.
- Rios, M. D., & Grob, C. S. (2005b). Interview with Jeffrey Bronfman, representative mestre for the Uniao do Vegetal Church in the United States. *Journal of Psychoactive Drugs*, 37(2), 189–191.
- Rios, M. D., & Rumrill, R. (2008). *A hallucinogenic tea, laced with controversy: Ayahuasca in the Amazon and the United States*. Westport (Conn.): Praeger.
- Rivier, L., & Lindgren, J.-E. (1972). "Ayahuasca," the South American hallucinogenic drink: An ethnobotanical and chemical investigation. *Economic Botany*, 26(2), 101–129. <https://doi.org/10.1007/BF02860772>
- Rodd, R. (2018). It's all you! Australian ayahuasca drinking, spiritual development, and immunitary individualism. *Critique of Anthropology*, 19. <https://doi.org/10.1177/0308275X18775818>
- Rush, B., Marcus, O., García, S., Loizaga-Velder, A., Loewinger, G., Spitalier, A., & Mendive, F. (2021). Protocol for Outcome Evaluation of Ayahuasca-Assisted Addiction Treatment: The Case of Takiwasi Center. *Frontiers in Pharmacology*, 12, 1203. <https://doi.org/10.3389/fphar.2021.659644>
- Santos, M. C., Navickiene, S., & Gaujac, A. (2017). Determination of tryptamines and β -carbolines in ayahuasca beverage consumed during Brazilian religious ceremonies. *Journal of AOAC International*, 100(3), 820–823. <https://doi.org/10.5740/jaoacint.16-0337>

- Santos, dos R. G., Balthazar, F. M., Bouso, J. C., & Hallak, J. E. (2016). The current state of research on ayahuasca: A systematic review of human studies assessing psychiatric symptoms, neuropsychological functioning, and neuroimaging. *Journal of Psychopharmacology*, *30*(12), 1230–1247. <https://doi.org/10.1177/0269881116652578>
- Santos, dos R. G., Bouso, J. C., & Hallak, J. E. C. (2017). Ayahuasca, dimethyltryptamine, and psychosis: A systematic review of human studies. *Therapeutic Advances in Psychopharmacology*, *7*(4), 141–157. <https://doi.org/10.1177/2045125316689030>
- Santos, dos R. G., & Hallak, J. E. C. (2021). Ayahuasca, an ancient substance with traditional and contemporary use in neuropsychiatry and neuroscience. *Epilepsy & Behavior*, *121*, 106300. <https://doi.org/10.1016/j.yebeh.2019.04.053>
- Santos, dos R. G., Landeira-Fernandez, J., Strassman, R. J., Motta, V., & Cruz, A. P. M. (2007). Effects of ayahuasca on psychometric measures of anxiety, panic-like and hopelessness in Santo Daime members. *Journal of Ethnopharmacology*, *112*(3), 507–513. <https://doi.org/10.1016/j.jep.2007.04.012>
- Santos, dos R. G., Osório, F. L., Crippa, J. A. S., & Hallak, J. E. C. (2016). Antidepressive and anxiolytic effects of ayahuasca: A systematic literature review of animal and human studies. *Brazilian Journal of Psychiatry*, *38*(1), 65–72. <https://doi.org/10.1590/1516-4446-2015-1701>
- Santos, dos R. G., Osorio, F. L., Crippa, J. A. S., Riba, J., Zuardi, A. W., & Hallak, J. E. C. (2016). Antidepressive, anxiolytic, and antiaddictive effects of ayahuasca, psilocybin and lysergic acid diethylamide (LSD): A systematic review of clinical trials published in the last 25 years. *Therapeutic Advances in Psychopharmacology*, *6*(3), 193–213. <https://doi.org/10.1177/2045125316638008>
- Santos, dos R. G., & Strassman, R. (2011). Ayahuasca and psychosis. In *The Ethnopharmacology of Ayahuasca*. (Ed. R. G. Santos, pp. 97–99). Transworld Research Network.
- Sats, K. (2012). *Vaimukeemia [The Spirit Chemistry]* [Bachelor's thesis. Supervisor: Anne Kull., University of Tartu]. <https://dspace.ut.ee/handle/10062/33884>
- Schmid, J. T., Jungaberle, H., & Verres, R. (2010). Subjective theories about (self-)treatment with ayahuasca. *Anthropology of Consciousness*, *21*(2), 188–204. <https://doi.org/10.1111/j.1556-3537.2010.01028.x>
- Shanon, B. (2003). *The antipodes of the mind: Charting the phenomenology of the ayahuasca experience* (1 edition). Oxford University Press.
- Shepard, G. H. (2017). Foreword. In *The World Ayahuasca Diaspora* (pp. xv–xix). Routledge. <https://doi.org/10.4324/9781315551425>
- Silveira, da D. X., Grob, C. S., de Rios, M. D., Lopez, E., Alonso, L. K., Tacla, C., & Doering-Silveira, E. (2005). Ayahuasca in adolescence: A preliminary psychiatric assessment. *Journal of Psychoactive Drugs*, *37*(2), 129–133. <https://doi.org/10.1080/02791072.2005.10399792>
- Sotsiaalministeerium. (2021). *Narkootiliste ja psühhotroopsete ainete ja ainerühmade nimekirjad I–VI*. Riigi Teataja. https://www.riigiteataja.ee/aktilisa/1230/2202/1019/SOM_m73_lisa1_uus.pdf#
- Souza, R. C. Z., Zandonadi, F. S., Freitas, D. P., Tófoli, L. F. F., & Sussulini, A. (2019). Validation of an analytical method for the determination of the main ayahuasca active compounds and application to real ayahuasca samples from Brazil. *Journal of Chromatography B*, *1124*, 197–203. <https://doi.org/10.1016/j.jchromb.2019.06.014>
- Stace, W. T., & Smith, H. (1987). *Mysticism and Philosophy* (1st paperback edition). Los Angeles, New York: J. P. Tarcher.

- Tankler, L. (2012). Meeltevabastamise uus trend: hallutsinogeeni sisaldav jook. *Eesti Päevaleht*. January 9, 2012. <https://epl.delfi.ee/artikkel/64903586/meeltevabastamise-uus-trend-hallutsinogeeni-sisaldav-jook>
- Thomas, G., Lucas, P., Capler, N. R., Tupper, K. W., & Martin, G. (2013). Ayahuasca-assisted therapy for addiction: Results from a preliminary observational study in Canada. *Current Drug Abuse Reviews*, 6(1), 30–42.
- Tupper, K. W. (2008). The globalization of ayahuasca: Harm reduction or benefit maximization? *International Journal of Drug Policy*, 19(4), 297–303.
<https://doi.org/10.1016/j.drugpo.2006.11.001>
- Tupper, K. W., & Labate, B. C. (2014). Ayahuasca, psychedelic studies and health sciences: the politics of knowledge and inquiry into an amazonian plant brew. *Current Drug Abuse Reviews*, 7(2), 71–80.
<https://doi.org/10.2174/1874473708666150107155042>
- Uthaug, M. V., van Oorsouw, K., Kuypers, K. P. C., van Boxtel, M., Broers, N. J., Mason, N. L., Toennes, S. W., Riba, J., & Ramaekers, J. G. (2018). Sub-acute and long-term effects of ayahuasca on affect and cognitive thinking style and their association with ego dissolution. *Psychopharmacology*, 235(10), 2979–2989.
<https://doi.org/10.1007/s00213-018-4988-3>
- Veskioja, R. (2014, April 24). *Eestis plaanitakse järjekordseid salajasi ning ohtlikke šamaanirituaale*. Delfi. <https://www.delfi.ee/news/paevauudised/krimi/eestis-plaanitakse-jarjekordseid-salajasi-ning-ohtlikke-samaanirituaale?id=68735095>
- Wang, Y.-H., Samoylenko, V., Tekwani, B. L., Khan, I. A., Miller, L. S., Chaurasiya, N. D., Rahman, Md. M., Tripathi, L. M., Khan, S. I., Joshi, V. C., Wigger, F. T., & Muhammad, I. (2010). Composition, standardization and chemical profiling of *Banisteriopsis caapi*, a plant for the treatment of neurodegenerative disorders relevant to Parkinson's disease. *Journal of Ethnopharmacology*, 128(3), 662–671.
<https://doi.org/10.1016/j.jep.2010.02.013>
- Zinberg, N. (1986). *Drug, Set, and Setting: The Basis for Controlled Intoxicant Use* (1 edition). New Haven, Conn., London: Yale University Press.

ARTICLES

SUMMARY

This thesis consists of four published articles that study ayahuasca use from chemical, psychological and spiritual viewpoints, and a summarising review article, which integrates the published results and my experience during the research process within the framework of critical autoethnography.

Ayahuasca is a psychoactive plant brew traditionally used for healing and divination in Amazonia and as a sacrament in eclectic Brazilian religions. Nowadays it is also used over the world, mostly in neoshamanic rituals in the context of new spirituality. My study was looking for answers to the following questions: What is ayahuasca? Who are its users, why and how is it used? What are the psychological and spiritual effects of participation in these rituals, both in the short term and long term, at the level of the individual, the user community and the society? What is the outcome, place and meaning of these practices in the life of the user, their community and the society?

This study approached ayahuasca from three different perspectives: chemical, psychological and spiritual, also considering its sociocultural aspects. Studying ayahuasca as a liquid containing bio- and psychoactive substances, chemical analyses of 102 samples of brews used in different traditions and places revealed large variability. Analytical data about brews used in different traditions (indigenous, religious (*Santo Daime*) and neoshamanic rituals) were compared statistically. In indigenous and *Santo Daime* samples, the concentrations of the synergistic active substances (DMT, harmine, tetrahydroharmine and harmaline) were within reasonable limits and well correlated with each other. However, in several brews used in European neoshamanic circles, the concentrations of the main psychoactive ingredient DMT were substantially higher than in other samples, and out of proportion compared to the other analytes. Falsification of ayahuasca used during the rituals was detected by chemical analyses. In some samples, traditional constituent plants had been replaced by other plants (*Peganum harmala*, *Mimosa tenuiflora*). Two samples contained substances that to the best of my knowledge, had never before quantitatively detected in ayahuasca: a significant amount of bufotenin and a synthetic psychopharmaceutical (moclobemide). The facilitators using these brews did not inform the participants about these substitutions. Normally, it would be the responsibility of the facilitator of the ceremony to provide clear and truthful information about the substances they offer. However, in the current regulatory situation, only the user carries the responsibility to request and verify this information, as well as to choose safe providers. Failing to do so might pose a risk for the user.

I studied ayahuasca users from a psychological, spiritual and sociocultural perspective as well. The study was based on data that consisted of psychological tests and questionnaires (30 users + 30 controls), as well as 60 interviews with ayahuasca users in Estonia. The results presented ayahuasca users as a unique cultural minority in our society. The studied participants had taken part mostly in neoshamanic rituals. In addition, experiences with local facilitators in South

America, rituals inspired by *Santo Daime*, mixed formats and some cases of individual use were reported. The spiritual background of the participants was varied with the majority of them identifying themselves as being “spiritual but not religious”. This self-identification is often associated with the concept of ‘*new spirituality*’. In several cases, the ayahuasca practice itself was an important part of their spirituality, and *the plant* was revered or perceived as a sacred being with agency and intention to heal and teach. The most commonly reported motivations for ayahuasca use included spiritual development, self-knowledge, spiritual experiences, psychological healing and interest or curiosity.

The majority of the participants perceived their ayahuasca use as a serious and relatively safe spiritual practice. They reported benefits to their lifestyle, psychological wellbeing, relationships, values and spirituality. On the contrary, a few participants described insignificant or difficult experiences and adverse outcomes. The users who participated in the psychological study were found to be mentally healthy and cognitively normal. As compared to the control group, screening test indicators of depression and anxiety were lower. Moreover, satisfaction with life and happiness about life were higher in ayahuasca users. However, these predominantly positive results may have been influenced by the unavoidable self-selection of the sample.

The interviews revealed that rituals with the use of ayahuasca were an important source of spiritual experience for the participants. The descriptions of the experiences were very variable. A few participants reported no significant effects, while the majority had encountered unusual phenomena, including various spiritual experiences. The rich collection of described experiences included the following: perceptual changes (resembling augmented reality); visionary journeys; states resembling lucid dreams; experiences of death and rebirth; experiences of healing activity in the body; out-of-body experiences; contacts and communication with spiritual beings; transformations (e.g. into an animal), and mystical experiences. Through repeated ceremonies, some participants had developed an ongoing relationship with *the plant*, which was experienced as a conscious, benevolent, sacred, wise, healing and guiding spiritual entity. In parallel, the internationally known representation of ayahuasca as spiritual mother, grandmother or Queen of the (rain)forest was apparent. On the community level, the *circle*, both in the sense of the other participants present at the session and as the rest of the community, was perceived as protecting individual experience, supporting its integration and providing a conceptual map for it.

The long-term effects of ayahuasca use were reported as predominantly beneficial, even in the case of difficult experiences during the session. The experience of participation in ayahuasca rituals influenced worldviews of the participants, and in many cases changed their lives. The participants reported the following: changes towards healthier lifestyle; physical and psychological healing; improved relationships; increased creativity; clarification of goals and values (“calibration of the life compass”); increased appreciation of everyday life and the ordinary state of consciousness; expanded worldview, and increased importance of spiritual values, among others. However, some participants described

difficult, overwhelming and/or traumatic experiences and adverse psychological consequences. Such atypical experiences and their contributing factors need to be studied further.

Ritual use of ayahuasca has a significant social dimension. The participants receive their experiences in a shared ceremonial space. Stating their intentions before the main session and sharing experiences in a ‘*talking circle*’ after the session are both established parts of the neoshamanic ritual. Spiritual experiences and their interpretations are also shared through informal communication. The shared experiences become embedded in the collective context of holistic beliefs that is characteristic to entheogenic esotericism and is largely rooted in new spirituality. This system of beliefs unites and protects the individual participants during the session, and in turn affects interpretation and integration of the experience. For example, physical or psychological suffering encountered during the session is understood as a lesson or message from the sacred plant, and as such necessary for healing and learning. This interpretation may help to make sense of the ordeal, enhance hope of favourable changes and re-interpret experienced suffering in a positive way. However, the framework of beliefs enables the facilitators of the ceremony to deflect their responsibility of care: the participant may be told that (s)he needed or deserved what they received from *the plant*. The beliefs may also limit the range of possible interpretations of the experiences.

Ritual use of ayahuasca as a collective spiritual practice presents a strong challenge to the mainstream discourse about psychoactive substances and their users. The plants and their cultural context have travelled around the world and they are here, with our people, among us. Our society is aiming for equal opportunities and inclusivity. It has progressively denounced and even outlawed discrimination based on a growing list of characteristics. We have learned to recognize an equally human being across our differences in gender, race, appearance, nationality, religion, physical or mental ability, sexual orientation *etc.* In this frame of reference, it seems also feasible to overcome intergroup bias towards the people who use and cherish a mind-altering plant-based beverage different from coffee and alcohol – especially when knowing that the practice forms an essential part of their spirituality and identity. Moreover, what if we abandoned all discrimination based only on *differences* (including bias between ayahuasca, alcohol and coffee users)? Could we replace it with reasonable regulations according to strictly evidence-based impact assessments (e.g. statistics that prove the harmful effects of certain modes of use of certain substances, e.g. driving under the influence of alcohol)? After all, alcohol use has been proven to have many harmful effects to society. However, and as compared to alcohol use, ayahuasca use has been demonstrated to be relatively safe in both clinical experiments and well-organized, spiritually oriented ritual forms.

Entheogens can also be seen as assisting devices for spiritually challenged people. Some people need glasses to see or a hearing aid to hear. Similarly, some people need some external aid to open their spiritual potential, and there is no need to judge them for that.

Furthermore, in addition to answering the research questions, the collected source material and the ideas derived from this study have potential for future studies. The psychological study and the interview-based study, taken together, have enough material to describe a typical neoshamanic ayahuasca ritual and its common variations in a more detailed way. Both the understudied phenomena of individual and scientific ayahuasca use and the emerging forms of use (e.g. online ceremonies and microdosing) deserve further studies. The hypothesis of bioaccumulation of tetrahydroharmine with repeated dosing and its connection to the afterglow effect could be tested in an experimental biochemical study.

Analysis of collected experiences of healings and other benefits may point to new therapeutic applications of ayahuasca. Which part of these subjective observations present as sufficiently frequent, large and robust to warrant controlled experimental studies? Can ayahuasca really heal autoimmune and respiratory diseases? Does the joint pain really leave when the patient has recognized and accepted its message with the help of *the plant*? Does the brew really help the tone-deaf to sing in tune during the ceremonies, or they just feel so under the influence? Such questions can be formalized and rigorously studied. In conditions of limited resources for research, the field of ayahuasca research could benefit from a synchronized dynamical roadmap of research plans and priorities.

To compensate for the lack of knowledge about the composition of the brews and doses actually used in the rituals, observational studies that measure the doses and collect samples for analyses could be conducted, and the resulting doses of the active substances could be compared with those used in clinical experiments for safety assessment. Such safety assessments together with culturally sensitive expert knowledge could become a basis for a more reasonable regulation of ayahuasca use in the society. The ideas of regulatory proposals presented by the participants could be used as input for further consideration and discussion. Professional experts (e.g. researchers, regulators and medical practitioners) can then assess these ideas, and also their own ideas, through objective analyses of feasibility, risks, costs and benefits. Decisions about the regulation of entheogenic spiritual practices should be based on both scientific evidence and culturally sensitive dialogues with experts in this field. These dialogues must include those who have the best practical knowledge of the real situation in the field and who are most affected by the outcome – participants of these practices ourselves.

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KOKKUVÕTE

Käesolev doktoritöö on interdistsiplinaarne uurimus “Püha metsaravim ayahuasca: keemilised, psühholoogilised ja spirituaalsed aspektid”. Ayahuasca on Amazoonia põliselanike püha taimejook, mida kasutatakse lisaks traditsioonilisele kasutusele rituaalselt ka neošamanistlikes tseremooniates ja Brasiiliast pärit sünkretistlikes religioonides. Uurimus koosneb neljast publitseeritud teadusartiklist ning neid sissejuhatavast ja kokkuvõtvast ülevaateartiklist. Ayahuasca kasutamist on neis artiklites käsitletud keemia, psühholoogia ja religiooniurintuete seisukohalt. Otsisin vastuseid järgmistele küsimustele. Mis on ayahuasca? Kes on selle kasutajad, miks ja kuidas seda kasutatakse? Millised on ayahuasca rituaalides osalemise psühholoogilised ja spirituaalsed mõjud lühemas ja pikemas ajaperspektiivis ning indiviidi, kogukonna ja ühiskonna tasandil? Milline on nende praktikate tulemus, koht ja tähendus kasutaja ja kogukonna elus ning ühiskonnas?

Ayahuasca kui bio- ja psühhoaktiivseid aineid sisaldava joogi keemilised analüüsid näitasid selle koostise suurt varieeruvust. Kogutud ja analüüsitud proovide hulk (102 proovi) võimaldas statistiliselt võrrelda erinevates kontekstides – Amazoonia põliselanike juures, religioossetes (*Santo Daime*) ja neošamanistlikes rituaalides – kasutatud jookide koostist. Koostoimivate bio- ja psühhoaktiivsete analüütide (N,N-dimetüültrüptamiini (DMT), harmiini, tetrahüdroharmiini ja harmaliini) kontsentratsioonid põliselanike ja *Santo Daime* jookides olid sarnases vahemikus. Eri analüütide kontsentratsioonide vahel, samuti DMT ja tetrahüdroharmiini suhteliste kontsentratsioonide vahel (st nende suhted harmiini kontsentratsiooni) ilmnes nendes jookides tugev positiivne korrelatsioon. Euroopa neošamanistlikelt tseremooniatelt saadi mitmesuguseid proove, neist osades olid peamise psühhoaktiivse toimeaine DMT kontsentratsioonid teiste proovidega võrreldes oluliselt kõrgemad. Osade Euroopas neošamanistlikel tseremooniatel kasutatud jookide analüüsid näitasid mittetraditsiooniliste taimede ja preparaatide (*Peganum harmala*, *Mimosa tenuiflora*, bufoteniin, moklobemiid) kasutamist. Selliste asendusjookidega peetud rituaalide korraldajad enamasti ei teavitanud osalejaid neist asendustest.

Psühholoogiliste testide ja küsimustike abil (30 Eesti kasutajat ja sama suur kontrollgrupp) ning ayahuasca kasutajatega läbiviidud 60 intervjuu käigus kogutud andmete alusel kasutatakse Eestis ayahuascat enamasti neošamanistlikes rituaalides. Uurimuses osalejad kirjeldasid oma kogemusi Lõuna-Ameerikast pärit ja muude tseremooniameistritega nii Eestis kui välismaal, Brasiiliast pärit sünkretistlikust *Santo Daime* usundist inspireeritud rituaale ja kombineeritud rituaalivorme. Mõnel korral teatati ka ayahuasca individuaalsest kasutamisest.

Kasutajate spirituaalne taust oli mitmekesine, enamuse neist määratlesid end uusvaimsusele iseloomulikult spirituaalse, kuid mitte religioosena. Mitmel uuritaval oli ayahuasca kasutamine ise oluline osa tema spirituaalsusest: *taime* austati ja teda tajuti püha olendina, kellel on agentsus ja tahe tervendada ja õpetada. Peamised motiivid ayahuasca rituaalides osalemiseks olid vaimne areng, enese

parem tundmaõppimine, spirituaalsete kogemuste saamine, tervenemine ning huvi või uudishimu.

Enamiku osalejate jaoks oli ayahuasca kasutamine tõsine ja suhteliselt turvaline vaimne praktika. Nad teatasid selle praktika positiivsetest mõjudest nende elustiilile, psühholoogilisele heaolule, suhetele, väärtustele ja vaimsusele. Siiski teatati ka keerulistest kannatusrohketest kogemustest ja soovimatutest järelmõjudest.

Psühholoogilises uuringus osalejate vaimne tervis ja vaimne võimekus olid normaalsed. Nad ei olnud ayahuascast sõltuvuses ega kuritarvitanud seda. Nende ärevuse ja depressiooni näitajad olid kontrollgrupi omadest madalamad ning nende eluga rahulolu ja õnnelikkus oli kõrgem kui kontrollgrupil. Sellised valdavalt positiivsed tulemused võivad olla mõjutatud valimi (paratamatust) iseselektioonist.

Intervjuudest ja küsimustikest selgus, et ayahuasca rituaalid on osalejate jaoks oluline spirituaalsete kogemuste allikas. Nende kogemuste kirjeldused olid väga mitmekesised. Osad kasutajatest ei tundnud olulist mõju, kuid enamus oli kogunud ebatavalisi ilminguid, sealhulgas mitmesuguseid spirituaalseid kogemusi. Saadud rikkalike kogemusekirjelduste hulgas on (spirituaalses võtmes tõlgendatud) liitreaalsuse laadsed tajumuutused, nägemuslikud rännakud, teadliku unenägemise (*lucid dream*) laadsed seisundid, surma ja taassünni kogemused, kehaliselt tajutavate tervendustoimingute kogemused, kehavälised kogemused, kohtumine ja suhtlemine vaimolenditega, transformatsioonid (nt muutumine loomaks) ja müstilised kogemused. Korduvalt rituaalidel osaledes loovad mõned osalejad kestva suhte *taimega*, keda osaleja tajub teadliku, heatahtliku, püha, targa, tervendava ja juhatava vaimolendina. Paralleelselt esineb rahvusvaheliselt levinud kujutus ayahuascast kui spirituaalsest emast või vanaemast, vihmametsa kuningannast.

Ayahuasca kasutamise pikaajalisi mõjusid kirjeldati valdavalt positiivsetena, isegi kui kogemus sessiooni käigus oli keeruline. Ayahuasca rituaalis osalemine mõjutas osalejate maailmavaadet ja paljudel juhtudel muutis nende elu. Kirjeldati muutusi, mille tulemuseks oli tervislikum elustiil, kehaline ja psühholoogiline tervenemine, paranenud suhted, suurenenud loovus, eesmärkide ja väärtuste selginemine (“elukompassi kalibreerimine”), kasvanud või taasleitud loovus, igapäevaelu ja teadvuse tavaseisundi kõrgem väärtustamine, avardunud maailmapilt ja spirituaalsete väärtuste olulisuse suurenemine. Siiski kirjeldati ka raskeid, ülejõukäivaid ja traumeerivaid kogemusi ning soovimatuid psühholoogilisi tagajärgi. Selliseid ebatüüpilisi kogemusi ja nende võimalikke põhjusi on vaja sügavamalt uurida.

Ayahuasca rituaalsel kasutamisel on tugev sotsiaalne mõõde. Osalejad saavad oma kogemuse ühises tseremooniaruumis. Osalejate *ring* kaitseb individuaalset kogemust sessiooni ajal ja toetab selle hilisemat tõlgendamist. Taotluste ja kogemuste jagamisel juturingi vormis on kindel koht neošamanistlikus rituaalis. Kogemusi ja nende tõlgendusi jagatakse ka mitteformaalses suhtluses. Jagatud kogemustele antakse koht uusvaimsuse põhises holistlikus uskumuste tervikus, mis on iseloomulik enteogeneensele esoteerikale. See uskumuste tervik mõjutab

omakorda kogemuste tõlgendamist ja igapäevaeluga seostamist (*integreerimist*). Näiteks mõistetakse sessiooni käigus kogetud kehalisi või psühholoogilisi kannatusi püha *taime* sõnumi või temalt saadud õppetunnina, ning sellisena vajalikuna tervenemiseks ja arenguks. Keeruliste kogemuste tõlgendus vastavalt jagatud uskumustele *taime* tahtest ja tarkusest võib aidata üleelatud raskusi mõtestada ja kogetud kannatusi positiivses võtmes ümber tõlgendada, andes lootust positiivseks elumuutuseks. Kuid see uskumuste raamistik võib ka kogemuse võimalike tõlgenduste valikut kitsendada. Samuti võimaldavad sellised jagatud uskumused tseremooniakorraldajatel veeretada kogu vastutuse rituaalil saadud kogemuse ja selle tagajärgede eest *taimele* ja osalejale endale, kes uskumusliku tõlgenduse kohaselt vajab või väärts seda, mida ta *taimelt* sai.

Ayahuasca rituaalne kasutamine kollektiivse vaimse praktikana esitab tugeva väljakutse peavoolu diskursusele psühhoaktiivsetest ainetest ja nende kasutajatest. Need taimed ja nende kasutamise kultuur on rännanud ümber poole maa-keri ja nüüd on nad siin, meie inimeste hulgas. Valdav enamus uuritust leidis, et ayahuasca rituaalides osalemine on nende elu positiivselt mõjutanud. Psühholoogiline uuring näitas, et see ei olnud neid kahjustanud, pigem vastupidi. Ühiskonnana oleme õppinud teineteises nägema võrdväärset inimest vaatamata soo, rassi, rahvuse, religiooni, kehalise või vaimse võimekuse, seksuaalse sättumuse jne erinevustele. Selliste erinevuste alusel vähemuste diskrimineerimine on järjest enam ebasoositud ja sageli lausa seadusega keelatud. Mis juhtuks, kui me ühiskonnana lõpetaksime inimeste diskrimineerimine *mistahes* erinevuste alusel ja lähtuksime käitumisviiside reguleerimisel üksnes *päriselt* tõendus põhised mõjude ja riskide võrdlevast analüüsist? Selles taustsüsteemis tundub võimalik ületada ka gruppidevahelised eelarvamused inimeste suhtes, kes kasutavad ja hindavad kõrgelt üht kohvist ja alkoholist erinevat teadvust mõjutavat taimejooki, ayahuascat – eriti teades, et see on oluline osa nende spirituaalsusest.

Tunnustades spirituaalsust inimese eluterve ja loomuliku põhivajadusena ning erinevate võimete ja vajadustega inimeste võrdset õigust oma potentsiaali väljaarendamisele, pole põhjust keelata spirituaalsuse aktiveerimise ja arendamise abivahendeid inimestele, kes neid vajavad. Pigem tuleks selliste abivahendite kasutamist mõistlikult ja tõendus põhised reguleerida, et see oleks turvaline ja annaks soovitud tulemusi.

Kogutud allikmaterjal ja saadud tulemuste põhjal tekkinud ideed võimaldavad edasisi uuringuid. Psühholoogiline uurimus ja intervjuudel põhinev uuring üheskoos sisaldavad piisavalt andmeid, et põhjalikumalt kirjeldada tüüpilist neošamanistlikku ayahuasca rituaali ja selle levinumaid variante. Kultuurilisest vaatepunktist on vähe uuritud ayahuasca individuaalset kasutamist ja kasutamist teadusuuringutes, samuti alles väljaarenevaid kasutusvorme nagu mikrodoosimine ja veebi vahendusel toimuvad tseremooniad. Hüpootees tetrahüdoharmiini bioakumulatsioonist korduval doosimis ja selle seosest järelmõju (*afterglow*) seisundiga oleks kontrollitav biokeemilise uuringuga.

Kogutud tervenemiste ja teiste positiivsete mõjude kirjelduste analüüs võib välja selgitada uusi võimalusi ayahuasca raviotstarbeliseks kasutamiseks. Milline kogutud kirjelduste ühisosa on piisavalt suur, sagedane ja kindel selleks, et seda

oleks mõtet uurida range metoodikaga kliinilistes katsetes? Kas ayahuasca tõepoolest aitab krooniliste autoimmuunsete ja hingamisteede haiguste vastu? Kas liigesevalu tõesti lahkub pärast seda, kui patsient on *taime* abiga valu poolt toodud sõnumi kuulda võtnud ja aktsepteerinud? Kas ayahuasca tõesti võimaldab ebanusikaalsetel inimestel rituaali ajal lauldes viisi pidada või see ainult tundub neile nii joogi mõju all? Selliseid küsimusi on võimalik teaduslikku vormi viia ja korraliku metoodikaga uurida. Kuna uurimiseks kättesaadavad ressursid on piiratud, siis oleks ayahuasca uurimiseks kasulik sünkroniseeritud dünaamiline uurimiskavade ja -prioriteetide teekaart.

Seniste vaatlusuuringute puudusi (nt teadmatus rituaalides kasutatavate jookide koostise ja koguse osas) aitaksid korvata rituaalide loomulikus keskkonnas läbiviidavad vaatlusuuringud, milles lisaks osalejate vaatlemisele ja küsitlemisele mõõdetakse iga osaleja saadud doose ja analüüsitakse joogi koostist. Selliste mõõtmiste põhjal arvutatud toimeainete doose saab võrrelda kliinilistes uuringutes kasutatutega ja nii hinnata rituaalide ohutust. Sellised ohutushinnangud koos kultuuritundliku ekspertteabega võiks aidata ayahuasca kasutust ühiskonnas mõistlikult reguleerida. Uurimuse käigus kogutud ideed ayahuasca kasutuse reguleerimiseks ühiskonnas tuleks süstematiseerida ja kasutada neid (koos objektiivsete teostatavuse, riskide, kulude ja positiivsete mõjude hinnangutega) sisendina kasutajaid ja rituaalide korraldajaid kaasavas reguleerimise teemalises dialoogis. Ayahuasca kasutajatena tunneme me oma praktikate tegelikkust kõige paremini ja selle dialoogi tulemus mõjutab kõige rohkem just meid. Seetõttu tuleks kasutajate endi vaatepunktid ja esindajad kindlasti sisuliselt kaasata enteogeensete spiriituaalsete praktikate ühiskondliku regulatsiooni üle otsustamisse.

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- Helle Kaasik, Doctor's Degree, 2002, (sup) Vladimir Hižnjakov, Nonperturbative theory of multiphonon vibrational relaxation and nonradiative transitions (Nonperturbative theory of multiphonon vibrational relaxation and nonradiative transitions), University of Tartu, Faculty of Physics and Chemistry.

Helle Kaasik, Master's Degree, 1995, (sup) Laur Palgi, Kolme neutriino maksimaalne segunemine (Maximal mixing of three neutrinos), University of Tartu, Faculty of Physics and Chemistry.

Supervised dissertations

Helena Landes, Master's Degree, 2020, (sup) Roland Karo; Helle Kaasik, Õnnelikkuse seosed religioossuse ja müstilise kogemusega Eesti valimil (Relationships of Happiness with Religiosity and Mystical Experiences in an Estonian Sample), University of Tartu, Faculty of Arts and Humanities, School of Theology and Religious Studies.

Publications

2021

Kaasik, Helle; Souza, Rita C. Z.; Zandonadi, Flávia S.; Tófoli, Luís Fernando; Sussulini, Alessandra (2021). Chemical Composition of Traditional and Analog Ayahuasca. *Journal of Psychoactive Drugs*, 53 (1), 65–75.
<https://doi.org/10.1080/02791072.2020.1815911>.

Kaasik, Helle; Altnurme, Lea (2021). Enteogeenne esoteerika ayahuasca kasutajate kogukonnas [Entheogenic esotericism in the ayahuasca user community]. Lea Altnurme (Ed.). *Mitut usku Eesti V. Esoteerika eri* (133–158). Tartu: Tartu Ülikooli Kirjastus.

2020

Kaasik, Helle; Kreegipuu, Kairi; (2020). Ayahuasca Users in Estonia: Ceremonial Practices, Subjective Long-Term Effects, Mental Health, and Quality of Life. *Journal of Psychoactive Drugs*, 52 (3), 255–263.
<https://doi.org/10.1080/02791072.2020.1748773>.

2019

Kaasik, Helle (2019). Ayahuasca rituaalne kasutamine Eestis [Ritual use of ayahuasca in Estonia]. *Usuteaduslik Ajakiri*, 75 (2), 118–146.
[https://usuteadus.ee/wp-content/uploads//2019_2%20\(75\)/Kaasik.pdf](https://usuteadus.ee/wp-content/uploads//2019_2%20(75)/Kaasik.pdf)

2016

Kaasik, Helle (2016). Eesti ayahuasca tarvitajate psüühika [Psychology of Estonian ayahuasca users]. (Master's thesis, University of Tartu). University of Tartu, Institute of Psychology.
<https://kodu.ut.ee/~hellex/aya/Ayamag12a.pdf>

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Teaduskraadid

- Helle Kaasik, magistrikraad, 2016, (juh) Kairi Kreegipuu, Eesti ayahuasca tarvitajate psüühika, Tartu Ülikool.
- Helle Kaasik, doktorikraad, 2002, (juh) Vladimir Hižnjakov, Nonperturbative theory of multiphonon vibrational relaxation and nonradiative transitions, Tartu Ülikool, Füüsika-keemiateaduskond.
- Helle Kaasik, magistrikraad, 1995, (juh) Laur Palgi, Kolme neutriino maksimaalne segunemine, Tartu Ülikool, Füüsika-keemiateaduskond.

Juhendatud väitekirjad

- Helena Landes, magistrikraad, 2020, (juh) Roland Karo; Helle Kaasik, Õnne-
likkuse seosed religioossuse ja müstilise kogemusega Eesti valimil, Tartu
Ülikool, Humanitaarteaduste ja kunstide valdkond, usuteaduskond.

Publikatsioonid

2021

Kaasik, Helle; Souza, Rita C. Z.; Zandonadi, Flávia S.; Tófoli, Luís Fernando; Sussulini, Alessandra (2021). Chemical Composition of Traditional and Analog Ayahuasca. *Journal of Psychoactive Drugs*, 53 (1), 65–75.
<https://doi.org/10.1080/02791072.2020.1815911>.

Kaasik, Helle; Altnurme, Lea (2021). Enteogeenne esoteerika ayahuasca kasutajate kogukonnas. Lea Altnurme (Toim.). *Mitut usku Eesti V. Esoteerika eri* (133–158). Tartu: Tartu Ülikooli Kirjastus.

2020

Kaasik, Helle; Kreegipuu, Kairi; (2020). Ayahuasca Users in Estonia: Ceremonial Practices, Subjective Long-Term Effects, Mental Health, and Quality of Life. *Journal of Psychoactive Drugs*, 52 (3), 255–263.
<https://doi.org/10.1080/02791072.2020.1748773>.

2019

Kaasik, Helle (2019). Ayahuasca rituaalne kasutamine Eestis. *Usuteaduslik Ajakiri*, 75 (2), 118–146.
[https://usuteadus.ee/wp-content/uploads//2019_2%20\(75\)/Kaasik.pdf](https://usuteadus.ee/wp-content/uploads//2019_2%20(75)/Kaasik.pdf)

2016

Kaasik, Helle (2016). Eesti ayahuasca tarvitajate psüühika. (Magistritöö). Tartu, Tartu Ülikool, psühholoogia instituut.
<https://kodu.ut.ee/~hellex/aya/Ayamag12a.pdf>

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39. **Liina Kilemit.** Kristlike kogudustega liitumise põhjustest. Tartu, 2020, 186 lk.
40. **Tiina-Erika Friedenthal.** Võitlus ja väitlus teatri üle Eesti- ja Liivimaal 18. sajandi lõpus ja 19. sajandi alguses. Tartu, 2020, 472 lk.

41. **Triin Käpp.** Kristlik väärtuskasvatus kristlikes koolides ning kristlike koolide roll Eesti ühiskonnas 21. sajandi algul. Tartu, 2021, 205 lk.
42. **Silja Härm.** Eesti gümnaasiumiastme usundiõpetuse õpetajate professionaalsed valikud usundiõpetuse õpetamisel. Tartu, 2021, 183 lk.