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Traditional aromatherapy in the clinical context of a therapeutic community for the treatment of substance use disorders

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ABSTRACT

Western medicine and psychotherapy have historically overlooked the potential of engaging the sense of smell for therapeutic purposes. However, in other medical traditions, such as that of the Peruvian Amazon, specific therapeutic interventions based on the use of aromatic plants are commonly performed in conjunction with other healing modalities. Traditional specialized healers locally known as *perfumeros* conduct such healing sessions. This research describes how this kind of traditional Amazonian aromatherapy is used in the context of Takiwasi center, a therapeutic community specialized in the treatment of substance use disorders. Participant observation was carried out by shadowing the healers in charge of specific aromatherapy sessions including the so-called plant baths, *sahumerio*, and saunas. Additionally, semi structured interviews were conducted with several members of Takiwasi's therapeutic staff, and non-peer reviewed publications and audio-video materials present in the Takiwasi archive were consulted and used as original data for this research. Data on users that received a plant bath from July 2019 to February 2021, were also acquired and discussed. The cosmology beyond this kind of traditional aromatherapy includes concepts such as "energetic body" and "spiritual entities", opening the discussion on something beyond the mere materialistic aspect of aromatic chemistry and pharmacology.

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INTRODUCTION

Scent is processed through the olfactory bulb (O'Connor & Jacob, 2008). Animal and human studies showed that odors evoke emotions and affect the autonomic nervous system (Kadohisa, 2013). Therefore, there is a strong relationship between smells and emotion. Along with the visual and auditory senses, the sense of smell plays a fundamental role in the construction of sociability and communication by influencing mood, choices and behavior (Semin & de Groot, 2013). There is also a known overlap in the brain-level processing of visual and olfactory stimuli hence the close association between the two sensory experiences (Gire *et al.*, 2013). The nerve connections between the olfactory receptors in the nose and the brain are faster and more direct than those of the other senses. This is why the olfactory stimuli are capable of causing such strong and

immediate reactions: a scent can give a thrill of intoxicating pleasure, or be so revolting as to cause vomiting. The sense of smell is, together with the sense of taste, a chemical sense. Since reactions in response to chemical stimuli are often visceral, this partly explains why they can cause a rather powerful experience, which can be difficult to describe (Gire *et al.*, 2013).

Nevertheless, modern Western medicine and psychotherapy have historically ignored the potential of engaging the sense of smell for therapeutic practice (La Torre, 2003). Further, Western medicine is said to separate the senses and invest in the visual in its healing practices. Shamanic healing, on the other hand, often involves all of the senses, for example with chants, touch, and pungent aromatics (Howes, 1998). The use of aromatic plants containing high quantities of volatile compounds capable of easily reaching and stimulating the

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receptors present in the olfactory bulb is a millenary medical-religious practice, still present in many cultures and at the center of many spiritual rituals (Ross, 2007, 2010; Sharifi-Rad *et al.*, 2017). Furthermore, the burning of natural incense in modern churches still remains an event full of meaning, with potential implications for wellbeing (Moussaieff & Mechoulam, 2009).

Within the Traditional Amazonian Medicine (TAM) context of *vegetalismo*, the presence of “*perfumeros*” has been previously recorded (Luna, 1986; Shepard, 2004; Steele, 2006; Beyer, 2009). These are healers who make use of aromatic plants and perfumes, including commercial ones, often associated with Tobacco (*Nicotiana rustica*, known with the local term of *mapacho*) that can be employed in liquid, aerial and solid form. Perfumes are traditionally used for their healing properties, for their spiritually cleansing and protective effects, and are also believed to attack or attract spirits (Beyer, 2009). Sometimes a *perfumero* may also be a *pusanguero*, that is, someone who ritually prepares mixtures with perfumes traditionally believed to make an individual to be attracted or fall in love with someone. These concoctions are called *pusangas* (Beyer, 2009). Among the perfumes used by this type of healers it is possible to find several commercial products known with the names of Agua de Florida, Tabu, Agua de Kananga, Rose Cologne, and Thimolina (Luna, 1986; Beyer, 2009). The present work, however, is focused on those aromatherapy practices that involve the use of natural aromas mainly derived from aromatic and medicinal plants. Most scientific research on Amazonian shamanism has focused on the use of Ayahuasca and its psychoactive effects (Fotiou & Gearin, 2019). Similarly, shamanic tourism to the Amazon is driven by an interest in visionary experience, which reflects the Western tendency to value sight over other senses (Labate, 2014). The sense of smell has however a crucial role within the healing practices of indigenous Amazonian cultures (Howes, 1998; Shepard, 2004). In this context, it is important to remind that the mere attention to active compounds when looking at traditional medicines may inflict marginalisation of non-Western knowledge systems, which become meaningful only when they can be tested molecularly (Reyes-Garcia, 2010).

Takiwasi is a health center located in the city of Tarapoto, in the Amazonian region of San Martin, Peru. It was founded by French doctor Jacques Mabit in 1992 with the aim of offering a rehabilitation program to heal substance use disorder (SUD), a rather prominent problem in the region between the 1980s and 2000s due to civil unrest and narcotics trafficking (Marcus & Fotiou, 2019). Takiwasi combines practices derived from TAM with psychotherapy and biomedicine (Berlowitz *et al.*, 2019; Giovannetti *et al.*, 2020), and has contributed to raising knowledge on TAM (Mabit & Mariscal, 2013) and to its recognition (Giove, 2014).

Healers at Takiwasi make use of numerous aromatic plants and perfumes within the therapeutic protocol. Although the institution has been at the center of a number of ethnobotanical and ethnomedicinal research projects until present, none have focused directly on these kinds of traditional aromatherapy practices.

MATERIALS AND METHODS

Study Site and Fieldwork Approach

Fieldwork was conducted in Takiwasi Center in Tarapoto, San Martín department, Peru, on two separate occasions, the first time in February 2019 and the second time in March 2020. Participant observation was carried out by shadowing the healers responsible for collecting the aromatic plants, preparing the mixtures and performing the specific therapies and/or rituals, namely plant baths, saunas, and *sahumerio*. Five Takiwasi staff members, experts in the field of traditional aromatherapy consisting of traditional healers and psychologists, were interviewed. Two semi structured interviews were carried out with each one of them to gather data on how aromatic plants are used in Takiwasi and what kind of rationale lies behind the way they are employed.

Ethical Approval and Consent to Participate

Ethical approval from the Takiwasi institutional review board (“Comité Institucional de Revisión de la Investigación” formally ratified with the act “Memorando Multiple N° 001-2021-TAKIWASI/PE”) was obtained. Informants consent with regard to the contents and purpose of the research was obtained. The interviews with the selected informants were conducted following the standard guideline for ethnobotanical fieldwork research (Code of Ethics of the International Society of Ethnobiology - ISE) and in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments.

Data From Grey Sources

An in depth analysis of non-peer-reviewed publications and audio/video recording (here defined as grey sources) stored in Takiwasi’s archive was performed. From a total of around 90 research documents including master or PhD thesis performed mostly by visiting researchers, but also technical reports, monographs, or books including those produced by internal personnel, only a few works that contains a specific section dedicated to aromatic plants and aromatherapy at Takiwasi were identified and consulted (Giove, 2002; Mabit, 2006; Horák, 2013). In addition to this, audio and video material focused on this topic and recorded since the beginning of Takiwasi’s activities was also consulted. Such data from grey sources, along with information acquired during fieldwork were used to select a list of plant species used in particular within the aromatherapy treatments. Such a list includes a description of the plant properties and applications. At Takiwasi every plant is mentioned using the local common name; for the purpose of this work, the corresponding scientific plant name has been identified, when possible, through the use of national botanical text references (Mejia & Rengifo, 1995; Brack Egg, 1999; Alarco de Zadra, 2000; Wasi, 2004). These names were then cross referenced and checked on the Medicinal Plant Naming Services (<https://mpns.science.kew.org/mpns-portal>). The botanical nomenclature of the “The Plant List” database available on the

website www.theplantlist.org was used for the identification of the current accepted scientific name of the plants.

Data From the Institutional Repository

The number of sessions of one of the main aromatherapy treatment performed at Takiwasi, namely the plant bath, was obtained from the clinical data management system of the institution. This data system is used for the collection, storage and management of different information collected from the therapeutic program of SUD patients in residential treatment, with a focus on ritual sessions with medicinal plants (Saucedo *et al.*, 2018). Since July 2019 this system records information also on the number of plant bath rituals performed on SUD patients, as well as on other categories of users at Takiwasi, such as those who arrive at the center to participate in retreats or plants diet (Politi *et al.*, 2019), seminars, volunteering, and those who specifically request only a ritual plant bath therapy.

RESULTS AND DISCUSSION

At Takiwasi, aromatherapy practices are used together with other traditional therapies such as plants diets, purges, and Ayahuasca which have been described in detail elsewhere (Politi *et al.*, 2018).

According to the interpretation of traditional Amazonian medicine by Takiwasi's specialists (Mabit, 2020), healing involves acting on three levels, physical, energetic and spiritual. The human body is considered as an entity not only physical (molecular), as in classical western medicine, but also endowed with an energetic envelope (atomic) and an information system linked to consciousness (sub-atomic or quantum), more akin to the modern concepts of relativistic physics. Rituals are considered to activate the power of plants beyond their molecular level to request their energy and spiritual potential so to act on the equivalent bodies of the patient. In the same way, the master healer uses his different "bodies" (physical, energetic and spiritual), which are more powerful thanks to the long training received, to intervene on the different "bodies" of his patient and provide healing (Mabit, 2020). This lack of separation between physical body and emotion emphasizes the importance of physical, emotional and spiritual balance to achieve wellbeing and has been observed by other researchers who performed ethnographic fieldwork in the Peruvian Amazon (Fotiou & Gearin, 2019).

Balance in the body is central to health and when lacking this can be restored through different types of therapies or a combination of them. At Takiwasi the aromatherapy sessions are considered important practices especially for the regulation of the so-called energetic body, the concept of energy being a key metaphor in Amazonian healing practices related to the soul, power, desire, and intention (Fotiou & Gearin, 2019). The information acquired during the present research indicates that aromatic plants products are recommended mainly to treat psychological problems, as well as to cleanse and protect from perceived witchcraft and evil spirits. Aromatherapy sessions at Takiwasi include the so-called plant bath, saunas, *sahumerio*, and

perfume ritual. While the first three involve the use of aromatic and medicinal plants and are detailed along the next sections, the latter is mainly based of synthetic and industrial perfumes remaining therefore outside the scope of the present article.

Plant Bath

A treatment offered to Takiwasi SUD patients, but also available for plants diet users and the general public is the plant bath, one of the typical tools of Peruvian TAM that include the use of aromatic and medicinal plants (Bussmann & Sharon, 2006; Jauregui *et al.*, 2011). Takiwasi therapists specialized in this treatment consider the plant bath an excellent therapeutic approach to release tensions in general, relax, eliminate stress, remove distress and anxiety, and so can be very beneficial in the first stage of SUD treatment. This therapy is administered individually.

A comprehensive list of the plants used in this context is provided in Table 1. When preparing plant baths, mainly leaves and/or flowers of the plants are used. These are mostly collected from Takiwasi's botanical garden (Politi & Friso, 2018). Some of the plants used are considered medicinal but are not properly aromatic (meaning that they do not contain essential oils nor relevant amount of volatiles constituents in specific organs such as the flowers). They are included, however, in Table 1 due to the fact that they are often used in combination with other plants that are properly aromatic, in order to prepare the final plant bath mixtures.

At Takiwasi there are two main methods to prepare the plant bath: with fresh plants or in decoction. In the first case the fresh plant bath, also called "*fresco*", is prepared on the same day of its application. Leaves and flowers of fresh medicinal and/or aromatic plants are collected by the healer in charge of the preparation, and are later partially cut, mixed and infused in a small quantity of cold water. This practice is locally known as "*chapear*" that is, the leaves and flowers are mixed with the water and crushed to extract the juice from the plants. Later more water will be added so to dilute this preparation. This water is then filtered and used in personal ritual contexts to bathe the patients. The aromatic water obtained from this process is meant to be absorbed through the skin and neither rinsed out nor dried off with a towel.

When the plant bath is prepared as a decoction, the leaves of medicinal and/or aromatic plants are collected and placed in a pot with boiling water. The volume of water should not exceed the volume of leaves. The mixture is boiled for a minimum of 15 minutes in case of preparing a bath for 1-3 people. The cooking time increases with the increasing amount of leaves, and up to 4-5 hours may be needed in case of preparing a plant bath for 20 people.

The choice of the type of preparation can vary based on the plants. For instance, in the case of plants toxic by touch such as Patiquina (*Dieffenbachia obliqua*), these can be exclusively used in the decoction preparation, so that the plant loses its toxicity without losing its alleged medicinal properties

(cleansing, protection). Another way for choosing between fresh or decoction plant baths is the clinical criterion of the therapists. Sometimes the patient can feel heat, associated with certain emotions such as anger, for those cases a fresh bath is recommended; in this way the patient perceives the refreshing effects of the plants. In the event that the patient may need some type of energetic protection, the preparation of a decoction plant bath will be preferred; this will be used when the water has cooled down.

Among the general category of plant baths used at Takiwasi, different subcategories can be distinguished (see Figure 1). One of them is the plant bath before the Ayahuasca session. In this case there is also a further distinction between the plant bath prepared for the patients who participate in the Ayahuasca ceremony and the plant bath prepared for the healers who conduct the same ceremony.

The plant bath for the patients is prepared with fresh plants. These are flowers and leaves of teacher plants (Luna, 1986)

such as Ayahuasca (*Banisteriopsis caapi*), Ajo sacha (*Mansoa alliacea*), Chiric sanango (*Brunfelsia grandiflora*) to which aromatic plants are added such as Shapilloja (*Zanthoxylum fagara*), Shingura sacha (*Cornutia sp.*), Albahaca (*Ocimum basilicum*) and Rosa sisa (*Tagetes erecta*). The “chapear” process is carried out and the leaves are left in fresh water for a minimum of two hours. To finish the preparation, Agua de Florida is added to aromatize the potion as well as some Tobacco juice, which has the purpose of enhancing the patient’s energetic protection. This bath is intended for the patients to participate in the Ayahuasca session with an energetically clean body.

The plant bath that the healers take before the Ayahuasca session is prepared in decoction. In this case, other types of plants are used, such as Patiquina, Mucura (*Petiveria alliacea*), Canela de Monte (bark – this is a commercially acquired product that was not botanically identified; possible *Aniba canellila* or *Ocotea sp.*), parts of Tobacco bundle and elements such as Camphor that have the specific objective of guaranteeing the protection of the energetic body, thus responding to the need

Table 1: Plants used in plant bath therapy at Takiwasi.

Local name	Botanical name	Indications of use
Ajo sacha	<i>Mansoa alliacea</i> (Lam.) A.H.Gentry. (Bignoniaceae)	Energetically cleansing, detoxifying
Albahaca	<i>Ocimum basilicum</i> L. (Lamiaceae)	Libido regulator, relaxing, improve the mood
Ayahuasca*	<i>Banisteriopsis caapi</i> (Spruce ex Griseb.) Morton. (Malpighiaceae)	Relaxation
Bobinsana*	<i>Calliandra angustifolia</i> Benth. (Fabaceae)	Relaxing
Canela de Monte	bark – not identified; possible <i>Aniba canellila</i> or <i>Ocotea sp.</i>	Energetic protection, mood regulator, calming
Coca*	<i>Erythroxylum coca</i> Lam. (Erythroxylaceae)	Relaxing, to increase dream activity
Chiric Sanango	<i>Brunfelsia grandiflora</i> D.Don. (Solanaceae)	For energetic cleansing at important moments of life
Hierba Luisa	<i>Aloysia citriodora</i> Paláu. (Verbenaceae)	Relaxing
Limón	<i>Citrus limon</i> (L.) Osbeck. (Rutaceae)	Relaxing, energy rebalancing
Mucura	<i>Petiveria alliacea</i> L. (Petiveriaceae)	Relaxing
Patiquina	<i>Dieffenbachia oblique</i> Poepp. (Araceae)	Purifying effect, deep cleansing, protection
Pichana Albahaca	<i>Ocimum campechianum</i> Mill. (Lamiaceae)	Decrease libido, relaxing
Piñon Colorado*	<i>Jatropha gossypifolia</i> L. (Euphorbiaceae)	Energetic cleansing
Rosa Sisa	<i>Tagetes erecta</i> L. (Asteraceae)	For energetic cleansing at important moments of life
Ruda	<i>Ruta graveolens</i> L. (Rutaceae)	Invigorating, relaxing
Shapilloja	<i>Zanthoxylum fagara</i> (L.) Sarg. (Rutaceae)	Energy rebalancing, relaxing
Shingura Sacha	<i>Cornutia sp.</i>	Relaxing
Toé	<i>Brugmansia suaveolens</i> (Humb. & Bonpl. ex Willd.) Bercht. & J.Presl. (Solanaceae)	For energetic cleansing at important moments of life, relaxing and increasing dreams
Yawar Panga	<i>Aristolochia didyma</i> S.Moore. (Aristolochiaceae)	Relaxing, to fight insomnia

* Plants that are considered medicinal but that are not properly aromatic.

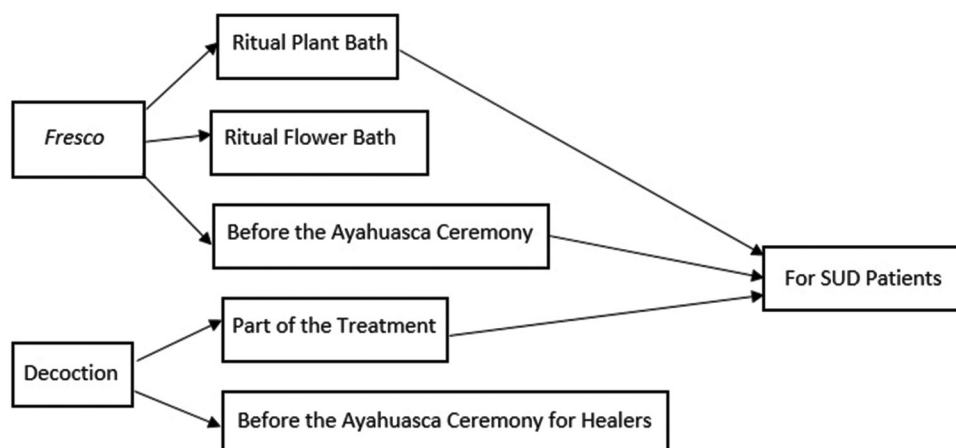


Figure 1: Types of plant baths performed at Takiwasi.

of the healer for increased protection, given that he/she will be in charge of handling the invisible forces unleashed during the ceremony. To these elements the leaves of the same teacher plants used in the fresh plant bath are added, that is, Ayahuasca, Ajo sachá and Chiric sanango. Flowers are not used in this case. Once the bath is ready, blows of Tobacco smoke and a prayer are performed on the decoction. This last procedure is considered necessary to activate the energetic potential of the preparation. We can therefore observe that the plant bath is prepared following specific steps that display respect also towards the spirit of the plants; this is a common attitude that has been previously observed also for other traditional Amazonian herbal preparations and crucial to the production of an efficacious preparation (Tresca *et al.*, 2020).

Another type of plant bath is that for which the fresh plants preparation is used. This is a ritual therapy generally offered to patients in treatment for SUD but also available for plants diet users and the general public. In this case, around two liters of plant aqueous extract are prepared for each person. Ritual plant baths at Takiwasi are performed individually in a hut next to the river and last around 45 minutes. The therapeutic efficacy of plant baths is tightly linked to the activity of the healer who is in charge of the ritual. He will perform sacred chants known as *ikaros* (Callicott, 2013), blow black Tobacco smoke on the patient, as well as spray a mixture of perfumes on his/her head and others relevant parts of the body (hands, back, chest), that, according to the Amazonian healers' knowledge, correspond to key energetic points (Berlowitz *et al.*, 2020). These traditional therapeutic techniques are known as “*soplada*” and/or “*ikarada*”. A vehicle, which is usually Tobacco in form of *mapachos*, but also synthetic perfumes, is “energetically charged” by singing on it (*ikarada*), to later apply it on the patient by blowing (*soplada*) the vehicle on his energetic points to reassure or protect him. The function of plant baths is mainly to protect and cleanse the patients on an energetic and spiritual level through the activity of plants and their medicinal/aromatic qualities. More or less halfway through the ritual, the patient pours the fresh plants water over his/her head and body and then the ritual continues. It is recommended not to shower for the rest of the day after this ritual plant bath, so that the plant aqueous extract can soak into the body.

On top of the classic plant bath described above a slightly less common one, known with the name of *baño de florecimiento* or flower bath, is also offered with the same ritual scheme. The latter's preparation is generally richer in flowers compared to the first one and is also traditionally used by the local population of the Peruvian Amazon for energetic cleansing at important moments of life (wedding, ceremonies, new year's eve).

Saunas

Another purifying method having an important role in the SUD treatment protocol of Takiwasi, especially in the first phase of physical detoxification, is the sauna. This is performed with the purpose of relaxing the patient, and is based mainly on the use of the aromatic plants listed in Table 2.

Table 2: Plants used in sauna therapy at Takiwasi.

Local name	Botanical name	Indications of use
Ajo sachá	<i>Mansoa alliacea</i> (Lam.) A.H.Gentry. (Bignoniaceae)	Energetically cleansing, detoxifying, to relieve muscle or joint pain, rheumatism
Albahaca	<i>Ocimum basilicum</i> L. (Lamiaceae)	Libido regulator, relaxing, improve the mood
Eucalipto	<i>Eucalyptus globulus</i> Labill. (Myrtaceae)	Detoxifying at a physical and energetic level
Hierba luisa	<i>Cymbopogon citratus</i> (DC.) Stapf. (Poaceae)	Relaxing
Limón	<i>Citrus limon</i> (L.) Osbeck. (Rutaceae)	Relaxing, energy rebalancing
Mucura	<i>Petiveria alliacea</i> L. (Petiveriaceae)	Relaxing
Pampa orégano	<i>Lippia alba</i> (Mill.) N.E.Br. ex Britton & P.Wilson (Verbenaceae)	Relaxing, improve the mood
Romero	<i>Rosmarinus officinalis</i> L. (Lamiaceae)	Restore memory
Ruda	<i>Ruta graveolens</i> L. (Rutaceae)	Invigorating, relaxing, restore memory

In the first part of the treatment for SUD, the use of detoxifying plants at a physical and energetic level is preferred for saunas. These are the so-called fire plants such as Mucura, Ajo sachá and Eucalipto (*Eucalyptus globulus*). In this case the sauna is performed around noon. Ajo sachá and Eucalipto are very helpful also to cleanse the lungs of toxins linked to smoking, since many patients have an addiction to commercial cigarettes associated with drug dependence, and local patients who consume cocaine paste (PBC, similar to crack) have a quite damaged respiratory system.

In a second stage of the treatment, but also at any time of need, aromatic and relaxing plants that tend to improve the mood, such as Albahaca, Pampa orégano (*Lippia alba*), and again Eucalipto are used. These plants are considered to have the effect of balancing the nervous system. Saunas with relaxing aromatic plants are done around 6 pm so that patients can later sleep better. In some other cases, specific plants are prescribed for the sauna. For example, if a patient has muscle pain or rheumatism, the sauna will be made specifically by using Ajo sachá leaves, being this a plant traditionally known to be able to treat such afflictions; this is in line with recent pre-clinical data (Hamann *et al.*, 2019).

Therapists teach new patients how to prepare their sauna and collect the plants for it so that they can do it on their own, and neither accompaniment nor supervision is needed. In the first phase of SUD treatment, especially in the first ten days, patients have 2 to 3 saunas per day, every day, and then in the following 8-10 weeks, patients may have one sauna per day, every day. After this first phase of intense physical detoxification, patients are left free to choose when to do a sauna, along with the plants to use; for example, if they require something relaxing or a detoxifying fire plant. Therapists consider that the physical detoxification caused by the sauna helps patients to improve their motivation, by showing them in a physical and immediately noticeable way that the treatment is working, as they are expelling toxins linked to their previous consumption of drugs.

Sahumerio

Another aromatherapy practice performed at Takiwasi is named *sahumerio* and is mainly based on the use of the wood of Palo Santo (*Bursera graveolens* (Kunth) Triana & Planch. - Burseraceae); this plant material is commercially acquired. Palo Santo is burned as incense at the beginning of each Ayahuasca ceremony, but is also used specifically to treat single patients, in the practice known as *sahumerio*. *Sahumerio* refers to the practice of burning herbs, incenses, and wood with the purpose of cleansing through the smokes. In Takiwasi it mainly consists in the use of Palo Santo or alternatively another Amazonian medicinal plant known as Catahua (*Hura crepitans* L. - Euphorbiaceae) that is placed on burning charcoal; the aromatic smoke derived by the burning wood is then fanned on the patient's body when he/she is standing as well as in lying position. The healer performs this practice of *sahumerio* in combination with singing chants (*ikaros*) around the patient's body, accompanied by a rattle. Even the use of other aromatic plant products or synthetic perfumes accompanies this practice, which can be held in the mouth of the healer and sprayed over the patient's body's surface. *Sahumerio* with Palo Santo is also periodically used to purify most of key locations and spaces at Takiwasi including the offices, the library, the shop, and the *malocas*¹ among others; this practice is considered relevant to energetically purify the overall center. A similar energetic purification of the facilities is performed every first Friday of each month, by throwing on the floor of the premises an aromatic water containing leaves of several plants, in a preparation that is similar to that of the *fresco* plant bath. This practice is known as "*ritual de limpieza energética*" (energetic cleansing ritual).

Plant Baths in the Context of SUD Treatment

From July 2019 to February 2021, 234 plant bath therapies have been registered at Takiwasi as shown in Table 3. Plant baths are offered to the general public, workers, and volunteers and also play an important part of the treatment for SUD patients. Overall for SUD patients, 59 plant baths have been registered.

Further analysis was performed on the data related to a sample of 20 SUD patients that have undergone treatment at Takiwasi during this time span. We observed that a patient could reach up to 8 plant baths in the span of five months, with therapies

¹ Ceremonial house where Ayahuasca ceremonies and purging rituals take place. It is built according to the model of the local indigenous common houses.

Table 3: Number of plant baths performed at Takiwasi from July 2019 to February 2021.

Type of User	N° of Plant Baths
SUD patients in residential treatment	59
General public	98
Volunteers and Researchers at Takiwasi	10
Takiwasi workers	14
Plants diet participants	36
Seminar participants	17
Total	234

that are particularly intense when it comes to patients newly admitted for treatment, and in need of physical detoxification from addictive substances and general toxins. As a general rule a SUD patient can receive up to 3 plant baths during the first couple of weeks of treatment, for general cleansing and detoxification.

According to the therapists at Takiwasi, throughout their treatment SUD patients experience significant emotional variations, deep internal movements, fights, explosions, implosions, and changes in how they feel and perceive themselves. This inner movement tends to generate imbalances that later, through the therapeutic process, lead to a new equilibrium. It is then necessary to have tools that help in the management of these situations, and plant bath is certainly one of them. The plant baths are in fact considered useful to reconnect the patient with his own body and get him out of mental tangles, distractions, obsessions, and recurring overwhelming emotions. The calming effect generated by the plant bath allows the patient to feel lighter and helps him better manage his turbulent inner world.

During the SUD treatment process, the prescription of a plant bath is the result of a diagnosis made by the therapists based on the observation of the patient's condition. Plant baths are prescribed: a) when the patient is going through an intense emotional experience (sadness, rage, anger, resentment) that does not allow him to see beyond, the plant bath allowing him to relax and release the tension accumulated; b) when the person has recurring, obsessive thoughts that mentally trap him and do not allow him to connect with his environment and with the present time; c) when a significant energetic load is diagnosed, for example, after an Ayahuasca session or the intake of other plants, the patient might experience nightmares and unpleasant physical sensations that according to the healers of the center are caused by energetic/spiritual issues; d) a patient can also ask for a plant bath if he feels like he needs it to ease symptoms of distress, anguish or general discomfort.

Therapists give importance to what happens to the patients the night after bathing, to observe if they rest well, what types of dreams they have; all this information is useful material for the subsequent psychotherapeutic accompaniment.

CONCLUSION

This work describes for the first time the use of the aromatherapy practices plant bath, sauna, and *sahumerio* at Takiwasi, a health center located in the Peruvian Amazon specialized in the treatment of SUD and mental health. Such practices are inspired and belong to the broader concept of Peruvian TAM. Aromatic plants are considered to act upon the energetic and spiritual state of the person receiving the treatment, which translates into a positive impact for people's mental and emotional wellbeing. Aromatic plants products are recommended not only to treat psychological and emotional problems, but also to cleanse and protect from perceived energetic/spiritual issues, witchcraft and evil spirits. In accord with other studies (Fotiou & Gearin, 2019),

plant baths are considered necessary to cleanse and fortify the body against such attacks.

Physical purification is instrumental to healing and it often precedes Ayahuasca ceremonies (Fotiou & Gearin, 2019). The importance given to the use of aromatic plant baths before the ceremony at Takiwasi, both for patients and healers, emphasizes how this practice is considered necessary for the participants to be prepared for the ceremony with a clean body so that physical, emotional and spiritual healing can take place. Within the overall Takiwasi therapeutic protocol, the synergism arising from the interplay between various treatment methods (i.e. aromatic plant baths, purging ceremonies, Ayahuasca session) is considered particularly relevant for the general treatment outcomes, and could be one of the main reasons behind the efficacy of Takiwasi's SUD treatment as also noted by other researchers (Berlowitz *et al.*, 2019).

Despite the long traditional use of aromatherapy practices worldwide, as well as their modern use, there is still some scientific debate about the efficacy of this therapeutic approach (Lee *et al.*, 2012; Freeman *et al.*, 2019; Schneider *et al.*, 2019). Olfactory research is a lively and vastly expanding area of scientific and cultural inquiry (Hoover, 2010). With this manuscript we hope to stimulate further research on aromatherapy in the context of traditional Amazonian medicine that can properly combine ethnobotanical surveys with a more in depth inquiry and inclusion of local cultural meanings of olfaction; this to move beyond a mere attention to molecules, which can often result in misrepresentations of traditional medicinal cultures.

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