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Research article

Ethnomedicinal plants used for the treatment of dermatological affections on the Purépecha Plateau, Michoacán, Mexico

Flora etnomedicinal utilizada para el tratamiento de afecciones dermatológicas en la Meseta Purépecha, Michoacán, México

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Abstract:

Background and Aims: Inhabitants of the Purépecha Plateau preserve an excellent ancestral knowledge on medicinal plants used for dermatological affections, which has not been documented. An ethnopharmacological survey was carried out in this region to gather information on the use of medicinal plants and herbal preparations for treating dermatological affections, to disseminate the Purépecha indigenous knowledge and identifying promising plants for developing new formulations for cutaneous conditions.
Methods: The study was conducted in the 21 municipalities that compose the Purépecha Plateau. A total of 86 local inhabitants (62 women and 24 men) were interviewed. The data were quantitatively analyzed through the determination of the use value, fidelity level and informant consensus factor.
Key results: A total of 97 plant species belonging to 47 families were documented for treating 19 dermatological conditions on the Purépecha Plateau. Asteraceae was the leading family among the collected medicinal plants (20.61%), followed by Lamiaceae (13.40%) and Solanaceae (5.15%). The largest number of plants was used for the treatment of cuts (40.20%), skin inflammation (37.11%) and rash (37.11%). The aerial parts were the most commonly used (34.75%). The medicinal plant species with larger use values were *Heterotheca inuloides* (0.53), *Aloe vera* (0.37) and *Oenothera rosea* (0.21). The comparison of results with ethnomedicinal literature worldwide revealed that 8.25% of plants used on the Purépecha Plateau were recorded for the first time for the treatment of dermatological affections.
Conclusions: This study provides new information on medicinal plants used on the Purépecha Plateau to treat cutaneous diseases. Future pharmacological and toxicological investigations are required to demonstrate the efficacy and safety of these species for treating dermatological affections.
Key words: dermatological diseases, ethnomedicine, herbal preparations, Purépecha, skin.

Resumen:

Antecedentes y Objetivos: Los habitantes de la Meseta Purépecha conservan un excelente conocimiento ancestral sobre plantas medicinales utilizadas para tratar afecciones dermatológicas que no ha sido documentado. Un estudio etnofarmacológico fue realizado en esta región para recopilar información sobre el uso de plantas medicinales y preparaciones herbarias utilizadas en la zona para el tratamiento de afecciones dermatológicas, con el objetivo de difundir la medicina tradicional Purépecha e identificar plantas prometedoras en el desarrollo de tratamientos para afecciones cutáneas.
Métodos: El estudio se realizó en los 21 municipios que componen la Meseta Purépecha. Se entrevistó a un total de 86 habitantes locales (62 mujeres y 24 hombres). Los datos se analizaron cuantitativamente mediante la determinación del valor de uso, nivel de fidelidad y el factor de consenso informante.
Resultados clave: En total 97 especies de plantas pertenecientes a 47 familias fueron documentadas para el tratamiento de 19 afecciones dermatológicas en la Meseta Purépecha. Asteraceae fue la familia principal entre las plantas colectadas (20.61%), seguida de Lamiaceae (13.40%) y Solanaceae (5.15%). La mayor cantidad de plantas se utilizó para tratamiento de heridas (40.20%), inflamación de la piel (37.11%) y erupciones cutáneas (37.11%). La principal parte utilizada de la planta fue la aérea (34.75%). Las plantas medicinales con mayores valores de uso fueron *Heterotheca inuloides* (0.53), *Aloe vera* (0.37) y *Oenothera rosea* (0.21). La comparación de los resultados con la literatura etnomedicinal reveló que 8.25% de las plantas utilizadas en la Meseta Purépecha se registraron por primera vez para tratamiento de afecciones dermatológicas.
Conclusiones: Este estudio proporciona nueva información sobre plantas medicinales utilizadas en la Meseta Purépecha para tratamiento de enfermedades cutáneas. Se requieren futuras investigaciones farmacológicas y toxicológicas para demostrar la eficacia y seguridad de estas especies para el tratamiento de afecciones dermatológicas.
Palabras clave: enfermedades dermatológicas, etnomedicina, preparaciones herbarias, Purépecha, piel.

Introduction

Skin diseases have been considered as the fourth leading cause of nonfatal disease burden worldwide (Hay et al., 2014). These conditions are widespread, being one of the most prevalent and disabling diseases and a source of considerable loss of life quality of patients. In rural populations, they are supposed to be one of the most common ailments (Policepatel and Manikrao, 2013). Skin affections have been related to clinical depression, anxiety and suicidal ideation, which represent a major additional problem with a significant negative impact for health systems (Dalgard et al., 2015).

Although in Mexico there are no extensive studies about the prevalence of skin diseases, the main reasons for dermatological consultation in the country are related with acne vulgaris, followed by psoriasis and melasma (HGM-SSA, 2012). In rural zones, the most frequent skin diseases are parasitic, viral and fungal infections as well as dermatitis and eczema (Paek et al., 2012).

Low adherence to treatments has been described for skin ailments (Storm et al., 2008; Augustin et al., 2011). Consequently, people frequently use natural products, mainly in undeveloped areas in which traditional herbal medicines play an important role in the management of these conditions (Sharma et al., 2014). In addition, many dermatological diseases have no cure (psoriasis, melanoma, pemphigus, etc.), so it is important to identify promising plants used in traditional medical systems to develop new therapeutic candidates. The ethnomedical studies remain very important in the discovery of new drugs and in the development of improved herbal preparations for use by local people (Heinrich and Gibbons, 2001).

The state of Michoacán, bordered by the states of Colima, Jalisco, Guanajuato, Querétaro, México and Guerrero is one of the regions of Mexico with the greatest diversity of plant species, many of which used for medicinal purposes (Medina, 2003). In pre-Hispanic times, this region was the home of the Purépecha Empire, which was centered on the Pátzcuaro lake basin. At that time, the Purépechas used copper agricultural tools in an exceptional way, compared to other Mesoamerican cultures (Amézcua Luna and Sánchez Díaz, 2015). They had a social stratification represented by the king, followed by knights, priests, and communities of farmers, fishermen, artisans and merchants (Amézcua Luna and Sánchez Díaz, 2015). Nowadays, the Purépecha people live mostly in the highlands of Central Michoacán, with a very important number of them on the Purépecha Plateau. The Purépechas preserve their language, traditions and customs, including an excellent ancestral knowledge of medicinal plants to treat various human health problems (INEGI, 2004).

The Purépecha Plateau is a rich reservoir of biodiversity which includes woody and herbaceous plants, the most important belonging to the genera *Quercus* L., *Salvia* L., *Gnaphalium* L., *Senecio* L., *Eupatorium* L., *Bidens* L., *Tagetes* L., *Stevia* Cav., *Pinus* L., *Cirsium* Mill., *Adiantum* L. and *Dalea* L. (Bello-González et al., 2015). Today, the participation of traditional Purépecha therapists in health services in this region is very important, mainly in those places where the public health system is still deficient (BDMTM, 2009).

Despite the importance of folk medicine by Purépechas, no ethnopharmacological studies are available about the use of plants for the treatment of dermatological conditions by this population. Therefore, it is considered that the documentation of Purépecha ethnomedicinal knowledge is required to identify promising plants for developing new therapeutic candidates or improved herbal preparations in the future.

Keeping the previously mentioned facts in mind, the present study was undertaken to scientifically enumerate medicinal plants and herbal preparations used by inhabitants of the Purépecha Plateau for the treatment of dermatological affections. Additionally, the ethnomedicinal studies performed on these plants are discussed to know whether other communities worldwide use the plants here reported for treating skin conditions, to estimate the contribution of this investigation to the global ethnopharmacological knowledge. Additionally, this study allows for the identification of plants to treat skin pathologies, which opens new perspectives for performing future phytoche-

mical, toxicological and pharmacological investigations with extracts or pure compounds from natural origin.

Materials and Methods

Study area

The state of Michoacán, formally "Michoacán de Ocampo", is situated in the western part of Mexico between 20°23'27" and 17°53'50"N latitude; 100°03'32" and 103°44'49"W longitude, with a surface of 59,864 km^2, which represents 3.04% of the Mexican territory (Mercado-Vargas and Palmerín Cerna, 2012). The state is very rich in biological diversity with around 5000 plant species described, several of them with medicinal properties (Medina, 2003). Additionally, it possesses a unique cultural heritage regarding the use of different natural preparations for many illnesses.

The present study was conducted on the Purépecha Plateau, which is located in the central-northwestern part of Michoacán, belonging to the Trans-Mexican Volcanic Belt. The area includes mountains and volcanoes such as Paricutín, Tancítaro, San Marcos and Comburindos. Its height ranges from 1700 to 3200 m. The annual mean temperature varies from 12-18 ºC, with rainfall concentrated in the summer (Orduña Trejo et al., 1999). The dominant vegetation of this zone is mainly composed by *Pinus* and species of *Quercus* and *Abies* Mill. In the northern part and in the northeastern area of the Purépecha Plateau, tropical deciduous forests are formed by species belonging to *Bursera* Jacq. ex L.*, Acacia* Mill.*, Opuntia* Mill.*, Tagetes*, *Melampodium* L. and *Euphorbia* L., among others (Orduña Trejo et al., 1999).

Twenty-one municipalities compose the Purépecha Plateau (surface area, 7348.64 km^2): (1) Charapan, (2) Cherán, (3) Chilchota, (4) Erongarícuaro, (5) Los Reyes, (6) Nahuatzen, (7) Nuevo Parangaricutiro, (8) Paracho, (9) Pátzcuaro, (10) Peribán, (11) Quiroga, (12) Tancítaro, (13) Tangamandapio, (14) Tangancícuaro, (15) Tingambato, (16) Tingüindín, (17) Tocumbo, (18) Tzintzuntzan, (19) Uruapan, (20) Zacapu, and (21) Ziracuaretiro. All of them were visited to record the ethnomedicinal information for this study (Fig. 1). The most important reasons that were considered to choose this zone were: a) the important presence of the Purépecha population on the Plateau (78.86% of its inhabitants) (CDI, 2010) with an inherited knowledge of medicinal plants, b) the high variety of plant species in this region, c) the significant impact of folk medicine on the health services, and d) the fact that no ethnopharmacological studies related to the treatment of dermatological conditions had been performed in the zone.

Studied population characteristics

Thirty trips were undertaken all over the Purépecha Plateau from May 2015 to October 2016, to collect information on ethnomedical plants. This period included both dry and rainy seasons. The people from this region were very accessible. Among municipalities, there is variation in the way of dressing, although some elements prevail. It has been noted that the traditional clothing for a woman consists in the use of an apron, often embroidered, as well as an embroidered back strap, woven belt, pleated skirt, embroidered blouse, and a mantle ("rebozo"). Indeed, the "rebozo" is more than a clothing to protect Purépecha women from the cold, its diversity (colorful, embroidered or frayed) is a symbol of their culture (Amézcua Luna and Sánchez Díaz, 2015). The man's outfit consists of a hand-woven sash, a blanket suit, and a hat for daily use. The most important economic activities of this region are the agriculture, forestry and the craft industry (BD-MTM, 2009). On the Plateau, 75% of habitants are bilingual, speaking both Spanish and Purépecha, and 25% speak Purépecha only (Amézcua Luna and Sánchez Díaz, 2015). This language has been classified as isolated, as no similitudes have been found with other Mesoamerican languages (Cambell, 1997).

Although there are public health services within the Plateau, most Purépechas trust traditional medicine as having positive effects on health. Currently, there are two organizations of Purépecha physicians: indigenous doctors from the 11 towns (Acachuén, Carapan, Chilchota, Etúcuaro, Huáncito, Ichán, Santo Tomás, Tacuro, Tanaquillo, Urén y Zopoco). The first institution, based in Cherán, is the "Clínica del Instituto Nacional Indigenista"

Figure 1: Study area. The diamond-shaped symbols indicate the location where ethnopharmacological surveys were conducted.

(Gallardo Ruiz, 2002); while the second association, currently located in Pátzcuaro, is the "Unidad de Medicina Tradicional". In descending order of importance for Purépechas, these traditional doctors are: healers, midwives, masseurs, sorcerers, bonesetters, herbalists and persons exclusively dedicated to the treatment of baby´s fallen fontanelle (BDMTM, 2009).

Ethnomedical survey and plant collection

The identification of "key informants" was performed as suggested by Bhat et al. (2014), considering the information obtained after discussion with local village people, who recommended these individuals, based on their knowledge regarding the use of plants for treating dermatological affections. Participants were clearly informed about the objec-

tive of the study and the survey was achieved only when they verbally consented to participate. All of them were also informed about their right to withdraw from the study at any time. Participants were asked about the tissue, method of preparation and mode of administration of plants used for the treatment of skin conditions using a semi-structured questionnaire. Information about age, sex and occupation of informants was compiled and analyzed as shown in Figure 2. Considering that all participants were bilingual and nobody requested to be interviewed in the Purépecha language, the interviews were conducted in Spanish.

The plant specimens collected during the survey were taxonomically identified, and properly labeled with the following data: habitat and size of the organism, flower and fruit color, date of collection, locality, municipality, collection site, altitude, geographical coordinates, plant uses, collector and collection number.

Taxonomic identification was realized based on specialized literature on the sampled taxa and floras of central and western Mexico. In support of identification, the specimens were compared to samples of the herbarium IEB of the Instituto de Ecología, A.C., in Pátzcuaro, Michoacán. Samples identified in the study were deposited in this herbarium with their respective voucher number (Appendix).

Statistical analysis and literature review

The use value (UV) was calculated for each of the recorded plant species, as proposed by Ferreira et al. (2009). This method allows quantitative evaluation of the relative importance of a determined medicinal plant, considering its use among informants (Ferreira et al., 2009). Higher UV values mean that participants attribute a great significance to a plant, with the advantage that it does not de-

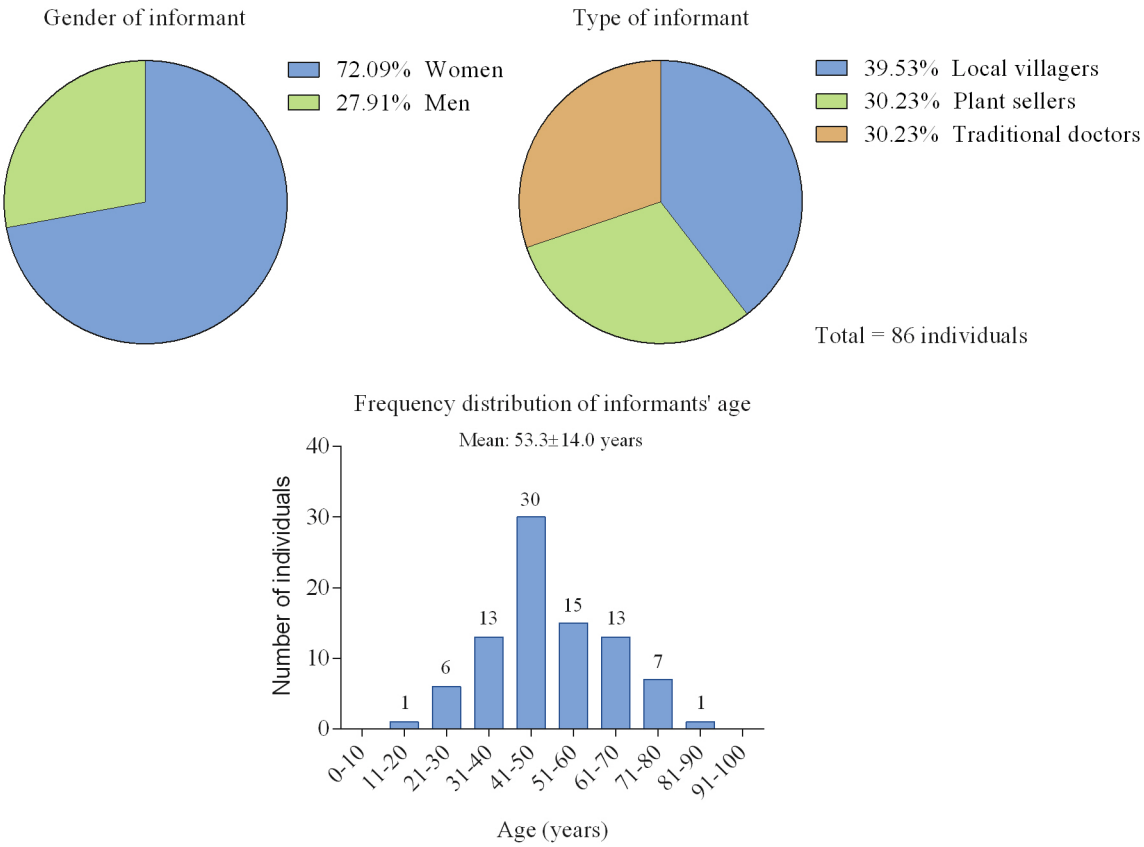

Figure 2: Characteristics of the participants in the ethnopharmacological study on the Purépecha Plateau.

pend on the researcher opinion. The following equation shows the formula for the evaluation of this parameter, where U is the number of times a species is cited and n the informant number.

$$UV = \sum \frac{U}{V}$$

To know how representative a plant was for the treatment of a particular dermatological condition, the fidelity level (FL) was calculated as shown in the next equation (Sharma et al., 2014):

$$FL\ (\%) = \frac{Ip}{Iu} \times 100$$

where Ip is the number of informants who independently indicated the use of a plant for the same particular dermatological condition and Iu the number of informants who mentioned the species for any dermatological condition (Sharma et al., 2014). A plant with high FL (close to 100) is used by traditional healers and people in the community for treating a particular disease. In contrast, a plant with low FL (close to 0.0) indicates that the plant is used to treat diverse diseases (Neamsuvan and Bunmee, 2016).

To estimate the level of agreement between all participants along the Purépecha Plateau about the plant used for each category, the informant consensus factor (F_{ic}) was determined as proposed by Ferreira et al. (2009). Higher values of this factor, close to 1, were related to a greater consensus between participants (Ferreira et al., 2009). Low values of F_{ic} indicate that the participants disagree on the species to be used for treating a particular dermatological affection. The F_{ic} was calculated as follows:

$$F_{ic} = \frac{(n_{ur} - n_t)}{(n_{ur} - 1)}$$

where n_{ur} is the number of reports concerning a dermatological category and n_t the number of species used for a dermatological affection by all the informants.

When all information was compiled, a detailed review was performed to know whether plants reported in this study were native of Mexico or not (Villaseñor, 2016). Moreover, their use in other ethnomedicinal studies worldwide for the treatment of dermatological disorders was also recorded. Literature was searched from various scientific databases such as Google Scholar, Science direct, Scopus and PubMed. Besides these bibliographic sources, the Digital Library of Traditional Mexican Medicine was also consulted to know the contribution of this work to the ethnopharmacological knowledge in Mexico (BDMTM, 2009).

Results

The ethnomedicinal information on plants used to treat dermatological affections was collected from 86 individuals of the Purépecha Plateau; detailed information on these persons is shown in Figure 2. They mentioned 731 plant uses and the specimens of collecting plants corresponded to 97 species belonging to 87 genera and 47 families, which were documented for the first time for the treatment of dermatological conditions in this area. Families frequently used by Purépecha Plateau inhabitants were Asteraceae (20 taxa), Lamiaceae (13) and Solanaceae (5) (Fig. 3), with the genera *Salvia* (4 spp.), *Tagetes* (4), *Allium* L. (2), *Artemisia* L. (2), *Euphorbia* (2), and *Solanum* L. (2) the most represented.

The dermatological conditions were classified into 19 categories according to the symptoms referred by participants as suggested by Sharma et al. (2014). These included blemishes, burns, calluses, cuts, fungal infections, hair fall, hematomas, infections with abscesses, skin inflammation, insect bites, pruritus, psoriasis, rash, skin bumps, skin care, superficial infections, varicella, varicose veins and warts. In this study, F_{ic} values were found to range between 0.14-0.75 (Table 1). The highest values were linked with hematomas (0.75), skin inflammation (0.73), varicose veins (0.73) and cuts (0.70), whereas lowest values were found for psoriasis (0.16) and blemishes (0.14). The highest numbers of plants were used for treating cuts (39 spp.), skin inflammation (36) and rash (36), whereas the treatment of warts (3) and calluses (2) was less reported among participants (Fig. 4).

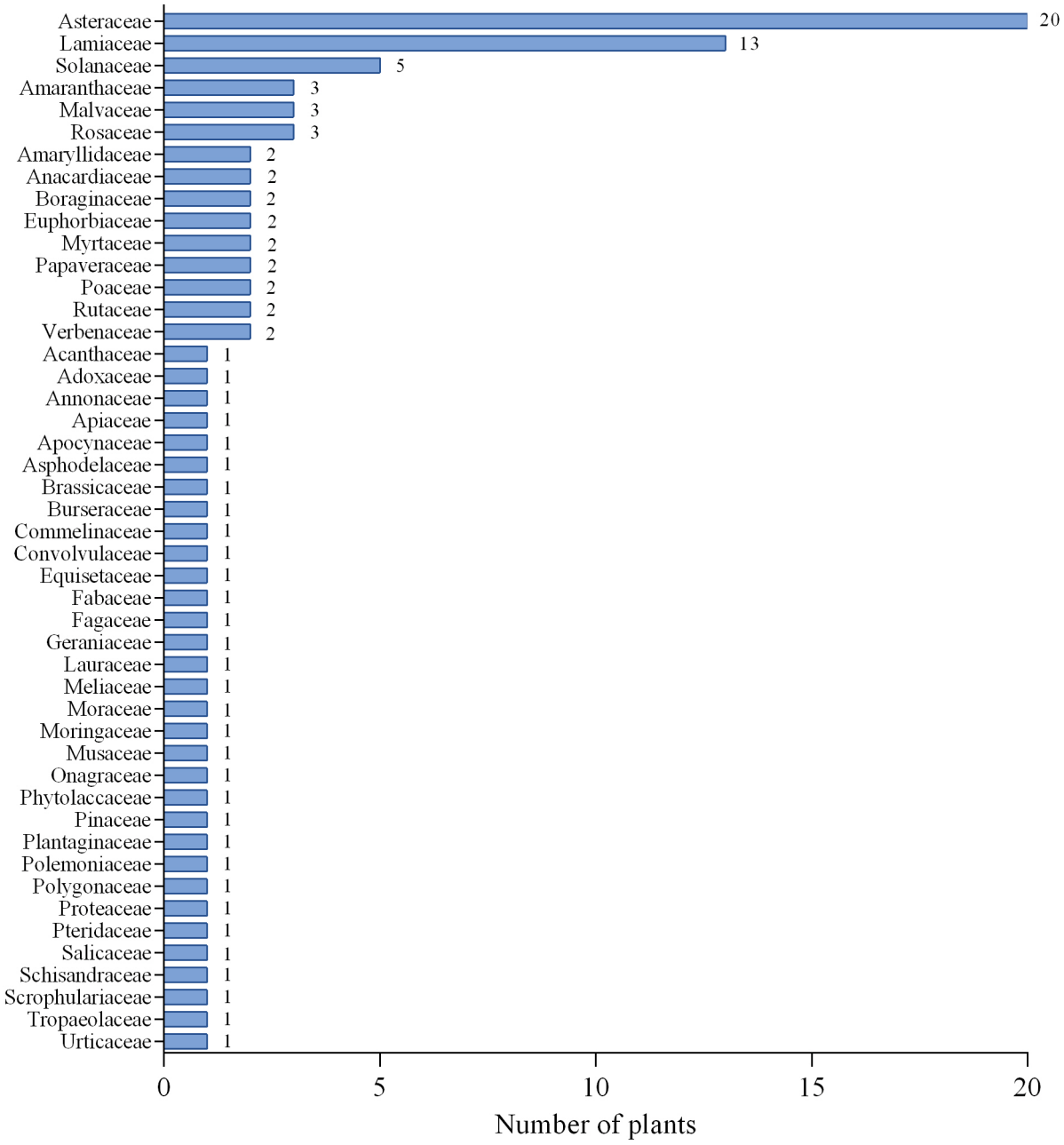

Figure 3: Family distribution of medicinal plants used on the Purépecha Plateau.

As revealed in Figure 5, the aerial parts which consist of a heterogeneous mixture of flowers, leaves and stems were preferred by participants (34.75%), followed by leaves (27.3%) and flowers (13.24%). In relation to the preparation modes, the most important were infusions (52.36%) and decoctions (15.13%). The present study also reports the use of common salt (sodium chloride) in small proportions for the preparation of pastes, particularly with the species *Senecio salignus* DC. and *Sida kaenkeana* C. Presl. Both plants are employed for treating cuts, hematomas, skin inflammation and skin bumps (Appendix).

Native and introduced plants (56.7 and 43.3%, respectively) are a valuable resource for local population for treating dermatological ailments (Appendix). According to

Table 1: Consensus factor values for different dermatological affection categories on the Purépecha Plateau.

Dermatological affection categories	F_{ic}
Hematomas	0.75
Skin inflammation	0.73
Varicose veins	0.73
Cuts	0.70
Calluses	0.67
Warts	0.67
Hair fall	0.66
Rash	0.61
Burns	0.60
Skin bumps	0.59
Skin care	0.57
Fungal infections	0.50
Superficial infections	0.48
Insect bites	0.48
Pruritus	0.46
Infections with abscesses	0.40
Varicella	0.40
Psoriasis	0.16
Blemishes	0.14

the UV, the five most preferred plant species to treat dermatological disorders on the Purépecha Plateau were *Heterotheca inuloides* Cass. (0.53), *Aloe vera* (L.) Burm. f. (0.37), *Oenothera rosea* L'Hér. ex Aiton (0.21), *Calendula officinalis* L. (0.17) and *Urtica subincisa* Benth. (0.17) (Fig. 6).

Appendix shows the fidelity levels (FL) for each plant recorded in the study. The FL indicates which species are mostly preferred for the study population to treat a given disease. In the present study, 39 species were determined to have the highest fidelity level (FL=100%) for different skin ailments (Appendix). For cuts these plants were *Azadirachta indica* A. Juss., *Commelina diffusa* Burm. f., *Chenopodium ambrosioides* L., *Eriobotrya japonica* (Thunb.) Lindl., *Geranium seemannii* Peyr., *Leonotis nepetifolia* (L.) R. Br., *Piqueria trinervia* Cav., *Sonchus oleraceus* L., *Tagetes lucida* Cav. and *Tagetes remotiflora* Kunze, for fungal infections *Zea mays* L., for hair fall *Buddleja sessiliflora* Kunth and *Verbena carolina* L., for infections with abscesses *Ipomoea murucoides* Roem. & Schult. and *Lepidium virginicum* L., for insect bites *Iresine interrupta* Benth. and *Tanacetum parthenium* (L.) Sch. Bip., for rash *Ceiba aesculifolia* (Kunth) Britten & Baker f., *Euphorbia nutans* Lag., *Lactuca sativa* L. *Montanoa tomentosa* Cerv., *Origanum majorana* L., *Physalis pubescens* L., *Prunus persica* (L.) Batsch, *Psidium sartorianum* (O. Berg) Nied. and *Stevia serrata* Cav., for skin bumps *Euphorbia pulcherrima* Willd. ex Klotzsch, *Ficus carica* L., *Illicium verum* Hook. f. and *Sida haenkeana* C. Presl, for skin care *Salvia leucantha* Cav., for treating skin inflammation *Aloysia citrodora* Paláu, *Artemisia ludoviciana* Nutt., *Artemisia mexicana* Willd. ex Spreng., *Eryngium beecheyanum* Hook. f. & Arn., *Marrubium vulgare* L. and *Moringa oleifera* Lam., and finally for superficial infections *Argemone ochroleuca* Sweet, *Bursera bipinnata* (DC.) Engl. and *Eriobotrya japonica*.

The literature review related to ethnopharmacological studies worldwide, focusing on dermatological conditions (96 published articles) and the information contained in the Digital Library of Traditional Mexican Medicine (Appendix), shows that several plants here reported (91.25%) are used by other populations for treating skin affections. Additionally, this study provides new ethnopharmacological information about plants used for treating skin ailments in the study area, as well as at national and global level, as no ethnomedicinal reports were found for *Eryngium beecheyanum, Tagetes remotiflora, Tournefortia mutabilis* Vent., *Equisetum hyemale* L. var. *affine* (Engelm.) A.A. Eaton, *Clinopodium macrostemum* (Moc. & Sessé ex Benth.) Kuntze, *Salvia leucantha, Sida haenkeana* and *Urtica subincisa* for managing dermatological conditions, which represent 8.25% of the reported plants (Appendix).

Discussion

Mexico is considered one of the countries with the highest floristic richness in the world, only preceded by Brazil,

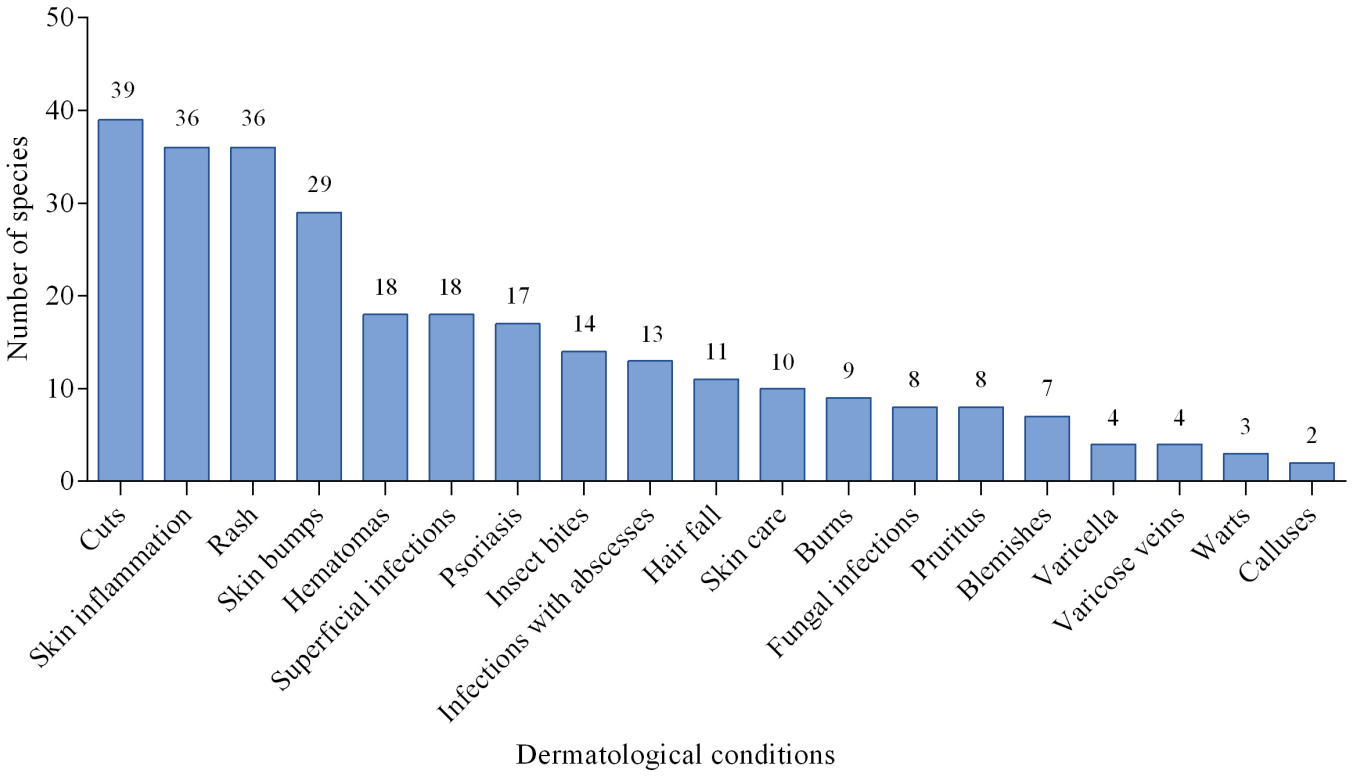

Figure 4: Number of plant species used for treating dermatological conditions on the Purépecha Plateau.

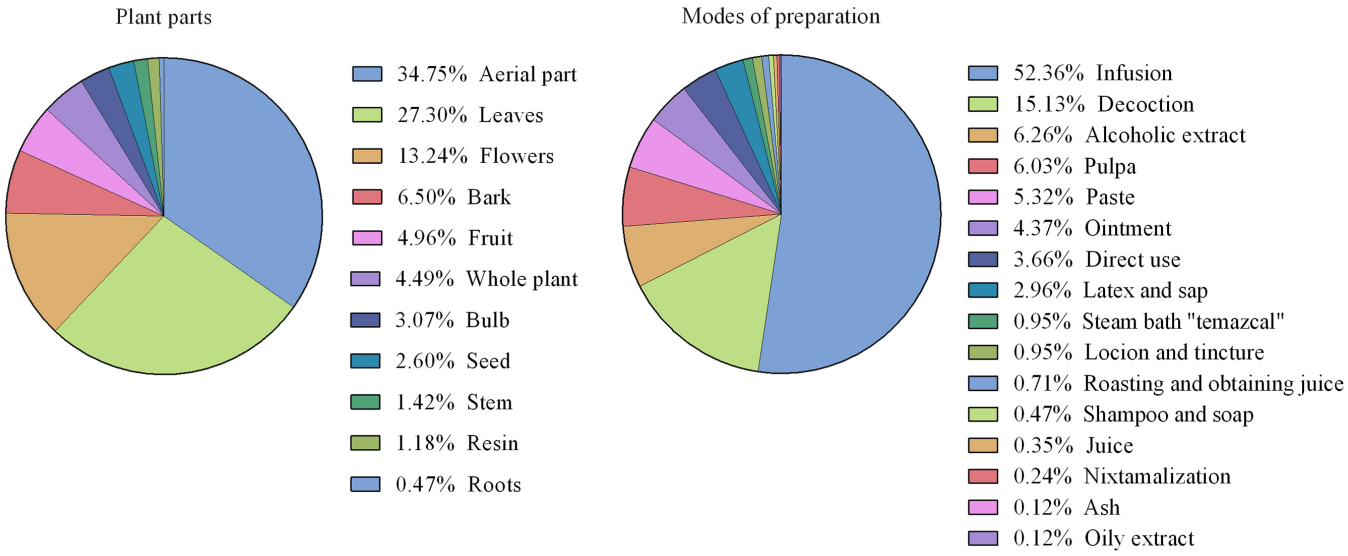

Figure 5: Plant parts and preparation modes used by inhabitants of the Purépecha Plateau for treating dermatological disorders.

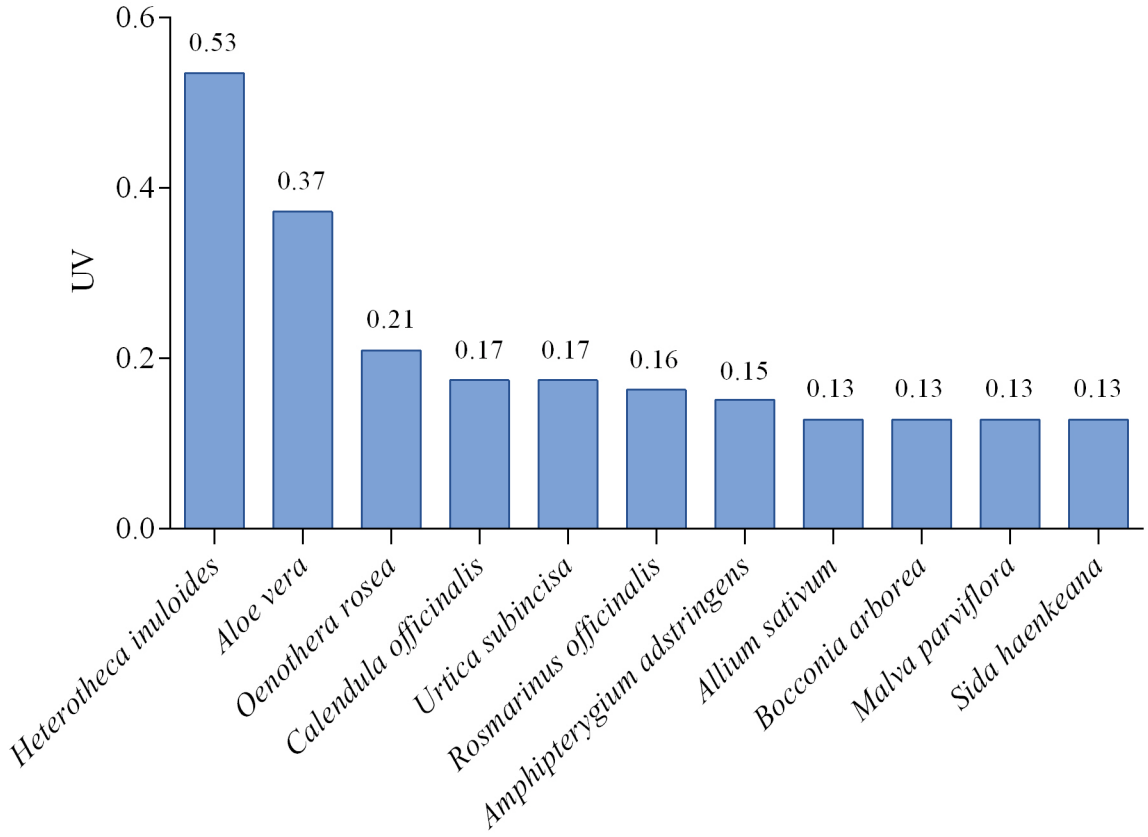

Figure 6: Plants with highest use values (UV) for treating dermatological ailments on the Purépecha Plateau.

China, Colombia and South Africa (Villaseñor, 2016). In this context, the study of ethnomedical systems, including the identification of herbal medicines, is of great importance in addressing health problems of traditional communities. On the Purépecha Plateau in the Mexican state of Michoacán, the knowledge about medicinal plants not only has an anthropological significance, it also allows that people with economic problems solve their health issues.

It is now recognized that the transmission of knowledge regarding the use of medicinal plants from old to new generations is declining (Calvo et al., 2011). This fact is also a reality in indigenous communities because of globalization and the use of orthodox medicine. Therefore, it is crucial to rescue this knowledge to prevent the loss of ethnomedical traditions, which is a precious scientific and cultural heritage for future generations.

The results indicate that among the inhabitants of the Purépecha Plateau, middle-aged people are the ones who best preserve the ethnopharmacological knowledge. It is suggested that there is a tendency towards the loss of these traditions among young persons of less than 30 years (Fig. 2). Juárez-Vázquez et al. (2013) noted that this is a common trend in Mexico. It is also striking that almost all knowledge about plants was obtained from women. This is related to the fact that based on the villager's recommendations, most of the contributors to this study were female. This was not unexpected, because it has been previously reported that among Purépechas, there is a clear quantitative predominance of women engaged in activities related to the use of medicinal plants (Gallardo Ruiz, 2002; BDMTM, 2009).

The present investigation has revealed the medicinal plants for treating skin affections and their modes of

preparation on the Purépecha Plateau, Michoacán, Mexico. The most prominent families were Asteraceae, Lamiaceae and Solanaceae (Fig. 3). These results agree with a previous study performed in the indigenous community of Nuevo Parangaricutiro, a municipality of the Purépecha Plateau, which reported Asteraceae and Lamiaceae as the most important families used for medical purposes in this region (Bello-González and Salgado-Garciglia, 2013). Other ethnomedicinal studies performed in Mexico have also suggested that Asteraceae are an important source of medicinal plants in the country (Andrade-Cetto, 2009; Alonso-Castro et al., 2012), probably due to the high diversity of its phytochemical constituents.

The highest F_{ic} values were linked with hematomas, skin inflammation, varicose veins and cuts, whereas lowest values were found for psoriasis and blemishes (Table 1). It is considered that higher values of this factor are related to prevalent illness in the region, which lead people to exchange information about their knowledge concerning plant therapy for a longer time (Gazzaneo et al., 2005). As previously mentioned, among dermatological conditions, a high morbidity has been reported in the state of Michoacán for venous insufficiency (100.88 per 100,000 population) and wounds (DGE, 2015), which could explain the higher values obtained for the consensus factor in these categories. Lower F_{ic} values for psoriasis and blemishes indicate that plants used for these ailments were chosen randomly or no information about them was exchanged among participants (Neamsuvan and Bunmee, 2016).

According to the information referred by the participants, the higher number of reported plants was used for treating cuts, skin inflammation and rash (Fig. 4). Literature review, regarding ethnopharmacological studies worldwide for dermatological conditions, also shows that many plants are used for cuts, in comparison with other skin ailments (Sharma et al., 2014; Neamsuvan and Bunmee, 2016). A recent study performed among the Zoque indigenous people of Chiapas and Oaxaca, Mexico, also found that among dermatological conditions, most plant remedies are used for wound treatment (Geck et al., 2016). Another possible reason that could explain the preponderance of the use of plants in the region for cuts is the high incidence in Michoacán of morbidities associated with this ailment due to gunshots and dog bites (54.26 and 82.11 per 100,000 population respectively) (DGE, 2015).

Unexpectedly, some participants (mainly sellers and healers) referred during semi-structured interviews to the use of plants to treat specific diseases such as psoriasis (Fig. 4). Psoriasis is considered the second reason for dermatological consultation in Mexico (HGM-SSA, 2012). As it is an incurable disease, characterized by a low satisfaction of patients with treatments (García-Pérez et al., 2012), it is likely that the inhabitants of the Purépecha Plateau search natural alternatives for its treatment, leading to sellers and healers to know about this ailment. Unfortunately, no epidemiological studies were found about the incidence of this illness in this particular population.

For treating of dermatological disorders, the aerial parts were preferred by participants, followed by leaves and flowers (Fig. 5). This result agrees with previous studies which have reported the use of aerial parts to cure skin disorders due to their ease access in natural environments (Sharma et al., 2014; Neamsuvan and Bunmee, 2016). It is interesting to note that unlike other ethnopharmacological studies focusing on skin ailments (Njoroge and Bussmann, 2007; Abbasi et al., 2010; Afolayan et al., 2014; Sharma et al., 2014), Purépechas prefer the use of infusions and decoctions taken orally instead of topical administration, applying crushed plants, pastes and juices. This could be explained by the fact that among Purépechas there is a belief that dermatological disorders are manifestations of blood contamination (BDMTM, 2009). Therefore, they believe that cleansing the blood using herbal remedies by oral route would lead to improve skin problems. Another peculiar aspect to be highlighted is the fact that the population under study uses the "temazcal" (0.95%) for the treatment of cutaneous conditions. This is a steam bath of pre-Hispanic origin used in Mexico for curative, preventive, hygienic and religious purposes (Aparicio Mena, 2006). Its use is supported by the belief that the heat of the patient´s body is fundamental for hea-

ling, since the disease is eliminated through sweat (BDMTM, 2009). The present study also reports the use of common salt in small proportions for the preparation of pastes. Additionally, Sharma et al. (2014) found the same trend in a study focusing on the use of herbal preparations for dermatological disorders in India. These authors argued that the possible reason behind the use of salt would be related with the fact that it inhibits the activity of bacteria and fungi, thereby helping the skin to heal (Sharma et al., 2014).

Native (56.7%) and introduced (43.3%) plants were valuable resources for local population for treating dermatological ailments (Appendix). Although in the context of medicinal plants, both introduced and native plants are important, it has been reported that in rural areas of Mexico, practitioners depend on the natural environment rather than cultivated areas to obtain medicinal plants (Andrade-Cetto, 2009; Alonso-Castro et al., 2012). Indeed, 53.6% of the collected plants of this study were gathered from the wild. The extensive use of native species by Purépechas could not only be related to a higher availability of these plants through the seasons, but also to the inherited knowledge about their medicinal properties from the ancestors. In fact, it is known that among Purépechas the transmission of knowledge related to traditional medicine is performed in more than 50% by means of relatives (BDMTM, 2009). However, a non-neglectable amount of exotic plants was also reported in the study area. The contribution of these species is very important as they amplify the spectrum of therapeutic alternatives for treating dermatological conditions on the Purépecha Plateau, reinforcing the local plant formulary.

Five plants with the highest UV to treat dermatological disorders on the Purépecha Plateau were *Heterotheca inuloides*, *Aloe vera*, *Oenothera rosea*, *Calendula officinalis* and *Urtica subincisa* (Fig. 6). *Heterotheca inuloides* is known as Mexican arnica and is extensively used for dermatological problems in Mexico. Additionally, this plant is used alone or in combination with other herbs, for diminishing the pain associated to rheumatism, stomach ulcers and other painful conditions associated with inflammatory processes. It is also reported in the management of kidney disease, urinary infections, cough, lung diseases, vaginal infections, gastrointestinal disorders and cancer (Rodríguez-Chávez et al., 2017).

According to the present study, Purépechas used this species for cuts, hematomas, infections with abscesses, skin inflammation, insect bites, rash, skin bumps, skin care, superficial infections, varicella, and varicose veins (Appendix). Its anti-inflammatory and antimicrobial properties in Purépecha traditional medicine are supported by pharmacological studies. Sesquiterpenes isolated from this plant exert activity against *Bacillus subtilis* var. *niger* Smith et al. (ATCC® 9372™), *Brevibacterium ammoniagenes* (Cooke and Keith) Breed (ATCC® 6872™), *Propionibacterium acnes* (Gilchrist) Douglas and Gunter (ATCC® 11827™), *Staphylococcus aureus* subsp. *aureus* Rosenbach (ATCC® 12598™), *Staphylococcus aureus* subsp. *aureus* (ATCC® 33591™), *Streptococcus mutans* Clarke (ATCC® 25175™), and *Trichophyton mentagrophytes* (Robin) Blanchard (ATCC® 18748™) with minimal inhibitory concentrations ranged from 6.23 to 12.5 mg/mL (Kubo et al., 1994). Infusions of *Heterotheca inuloides* inhibit the activity of cyclooxygenase enzyme by 40%, suggesting an anti-inflammatory effect of polar metabolites of this plant (Muñoz-Velázquez et al., 2012).

Aloe vera has been widely used for treating skin diseases across the globe. This plant is also very popular for managing cutaneous conditions in other Mexican states, such as Oaxaca and Chiapas (Geck et al., 2016). *Aloe vera* has demonstrated pro-cicatrizing effects by increasing collagen content in wounds and the degree of collagen cross linking (Heggers et al., 1996). Additionally, it possesses a protective effect against skin damage induced by radiation, anti-inflammatory activity, moisturizing and anti-aging effects (Choi and Chung, 2003). These pharmacologic properties justify its extensive use in traditional Purépecha medicine. *Oenothera rosea* is a native plant of Mexico that stimulates the proliferation of normal human fibroblasts in vitro (Takahashi et al., 2012), which could be related to its use for cuts by Purépechas. This species also reduces chronic and acute skin inflammation in rats (Villena and Arro-

yo, 2012), so it can function as anti-inflammatory agent, as referred by the population under study. *Calendula officinalis* has been employed in folk therapy for treating skin ailments worldwide. On the Purépecha Plateau, this plant is used for multiple skin affections including blemishes, burns, cuts, skin inflammation, insect bites, pruritus, psoriasis, rash, skin bumps and superficial infections (Appendix). Pharmacological studies suggest that extracts from this plant can protect skin against ultraviolet-induced damage (Fonseca et al., 2010). Moreover, this plant is highly effective for the prevention of acute dermatitis of grade 2, which occurs after postoperative irradiation for breast cancer, demonstrating its anti-inflammatory properties (Pommier et al., 2004). The extract of the flowers of this plant is also broadly recognized by its wound-healing promoting effects (Preethi and Kuttan, 2011). The multiplicity of pharmacological activities of this species on the skin agrees with its wide use on the Purépecha Plateau for dermatological conditions. Surprisingly, Purépechas frequently reported the use of *Urtica subincisa* for skin inflammation, skin bumps and varicose veins (Appendix). To the best of our knowledge, this native plant has not been previously reported neither in Mexico nor in the world for treating cutaneous disorders. Further phytochemical, toxicological and pharmacological studies with this species are required to establish its importance for treating skin ailments.

Thirty-nine plants were the most important, according to their FL (100%) for the treatment of 10 of the 19 dermatological conditions informed by the participants. These plants offer very interesting clues as to their pharmacological potential for the treatment of a specific skin ailment (Appendix). Additionally, this study provides new ethnopharmacological information about plants used for treating skin ailments on the Purépecha Plateau, Mexico and the world (Appendix). Apart from *Tagetes remotiflora*, all these plants are native of Mexico. *Eryngium beecheyanum* is a herbaceous plant which has been reported by peasants of the Sierra de Huautla, Morelos, Mexico, for kidney inflammation (Maldonado-Almanza, 1997). According to its fidelity level, it seems to be a promising candidate to treat skin inflammation (FL=100%). *Tagetes remotiflora* has been reported in the community of Nuevo Parangaricutiro by its antidiarrheic effect, as well as against vomiting, nerves and blood pressure (Bello-González et al., 2015). Its highest FL for cuts (FL=100%) indicates that it could also be employed for this affection. *Tournefortia mutabilis* has been reported to have antimicrobial properties (Sharma et al., 2017), which could be related to its use in superficial skin infections by Purépechas (FL=66.7%). In traditional Mexican medicine, *Equisetum hyemale* var. *affine* is mainly used for kidney conditions, pain, stomach inflammation, gastritis, ulcers and reproductive woman disorders (BDMTM, 2009). Although its use for treating skin conditions has not been reported, results obtained in this study indicate that it could probably be effective for hair fall and skin inflammation (FL=50.0%). *Salvia leucantha* is used in Mexico for stomach pain, respiratory ailments, reproductive disorders and diabetes (BDMTM, 2009; Romero-Cerecero et al., 2009). Our results point out that this species could also be used for skin care as the highest FL was obtained in this category. Although no reports were found regarding the use of *Clinopodium macrostemum* for dermatological disorders, its use for gastrointestinal affections and respiratory diseases has been documented in Mexico (INEGI, 2014). As its higher FL was obtained for skin inflammation (FL=83.3%), it would be interesting that further studies be performed to ratify this activity using in vitro and in vivo relevant models. To the best of our knowledge, *Sida haenkeana* and *Urtica subincisa* are reported for the first time as medicinal plants. According to their FL, *Sida haenkeana* seems to be a promising candidate to treat skin bumps (FL=100%), whereas *Urtica subincisa* was catalogued as anti-inflammatory agent (FL=80.0%). Traditional uses of the medicinal flora from the Purépecha Plateau can serve as a starting point for further scientific analysis, which may provide novel compounds or improved herbal preparations for treating skin diseases.

Conclusions

This study demonstrates that herbal remedies play an important role in healing skin by inhabitants of the Purépecha

Plateau, state of Michoacán, Mexico. A total of 97 species were identified to treat 19 skin ailments. The quantitative analysis performed through the determination of the use value, fidelity level and the informant consensus factor allowed to identify plants as promising candidates for developing new dermatological formulations. This investigation is also a guide to the conservation of folk medicinal knowledge from indigenous people of Mexico, through a vision of sustainable use of natural resources. From the ethno-pharmacological point of view, it provides new information about plants whose medicinal properties for the skin had been unknown up to now. Additionally, it allows for dissemination of the inherited knowledge of Purépechas regarding herbal preparations for cutaneous diseases. The identification of plants used by this population to treat skin pathologies also opens new perspectives for performing phytochemical, toxicological and pharmacological investigations that allow the development of new herbal preparations or new drugs addressed to improve the quality of life of patients suffering from these diseases.

Authors contribution

MEGP, AOZ and REG designed the study. REG, MEGP and EPC conducted interviews and collected the plants referred by participants. EPC identified the specimens and deposited them in the herbarium IEB. REG drafted the manuscript under the supervision of AOZ, EPC and MEGP. All authors contributed to the review and approval of the final manuscript.

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Appendix: Plants used by inhabitants from the Purépecha Plateau for the treatment of dermatological conditions: use value (UV), fidelity level (FL), modes of preparation and ethnomedicinal studies.

Scientific name (voucher specimen number in the herbarium IEB)	Vernacular name	Native plant of Mexico	Use Value/Dermatological conditions (fidelity level)	Mode of preparation by inhabitants from the Purépecha Plateau	Ethnomedicinal studies worldwide mentioning the use of the species for dermatological conditions	References
PTERIDOPHYTA						
Pteridaceae						
Adiantum capillus-veneris L. (256871)	cilantrillo	yes	0.03/rash (66.7), skin bumps (66.7)	The infusion of the whole plant is used for washing the affected area.	North-West Frontier Province, Pakistan, for measles treatment.	Abbasi et al., 2010.
GYMNOSPERMAE						
Pinaceae						
Pinus leiophylla Schiede ex Schltdl. & Cham. (256882)	pino	yes	0.05/skin inflammation (75), hematomas (25), psoriasis (25), skin bumps (25)	The alcoholic extract of its bark is used in fomentation form on the affected area. The oil obtained from the distillation of its resin is used to prepare ointments.	Mexico, for treating dermatitis.	BDMTM, 2009.
ANGIOSPERM						
Acanthaceae						
Justicia spicigera Schltdl. (256899)	muicle	yes	0.12/skin inflammation (50), rash (30), blemishes (20), insect bites (20), varicose veins (10)	The infusion or decoction of the flowers and leaves is used for the washing on affected area. They are also used as foments. The leaves infusion is taken orally.	Mexican medicine, to purify the blood as well as in erysipelas, syphilis, scabies, tumors, pimples and skin inflammations. In Guatemala, for treating eruptions and erysipelas.	Cáceres et al., 1987; Andrade-Cetto, 2009; BDMTM, 2009; Ávila-Uribe et al., 2016.
Adoxaceae						
Sambucus nigra L. (256844)	sauco, cundemba	yes	0.05/cuts (50), burns (25), pruritus (25), rash (25)	The leaves are rubbed on the affected area. The decoction of leaves and bark is used to wash the lesions. With the aqueous bark extract ointments are made.	Spain, Italy and Malta for treating scalps, erysipelas and other skin disorders.	Guarrera et al., 2005; Benítez et al., 2010; Caruana and Attard, 2016.
Amaranthaceae						
Alternanthera caracasana Kunth (256863)	tianguis	yes	0.09/rash (62.5), skin bumps (50), varicella (25)	The infusion of the whole plant is used for washing the affected skin area.	Mexico, used for skin washes.	Canales-Martínez et al., 2005.
Chenopodium ambrosioides L. (256898)	epazote	no	0.02/cuts (100)	The decoction from leaves is used for washing the affected skin area.	Cuba, for cutaneous leishmaniasis. In Guatemala, for burns, skin irritation and wounds.	Cáceres et al., 1987; Monzote et al., 2009.
Iresine interrupta Benth. (256862)	hierba de arlomo	yes	0.08/insect bites (100), warts (28.6) psoriasis (14.3)	The aerial part is crushed, and the paste or tincture is applied on skin lesions. The infusion of leaves is used for washing the affected area.	Mexican traditional medicine, for insect bites.	BIOAGRICOOP, 1998; Navarrete-Heredia and Gómez Flores, 2005.

Appendix: Continuation.

Scientific name (voucher specimen number in the herbarium IEB)	Vernacular name	Native plant of Mexico	Use Value/Dermatological conditions (fidelity level)	Mode of preparation by inhabitants from the Purépecha Plateau	Ethnomedicinal studies worldwide mentioning the use of the species for dermatological conditions	References
Amaryllidaceae						
Allium cepa L. (256837)	cebolla	no	0.09/burns (50), hematomas (37.5), hair fall (12.5)	The bulb is crushed, and the paste is applied on affected skin area.	Reported in Mexico for the treatment of cuts, skin bumps and hair fall. Tharu community in India used it for the treatment of ringworm and skin allergy. In the Sarrabus region, Italy, used as antiherpetic. In North Pakistan for treating soothe irritation caused by scorpion and hornet stings. In Edo State, Nigeria for rashes and stings. In Central Chaco, Argentina, for bites and warts. In Terengganu, Malaysia, for treating cuts, sores, pimples and abscess. In Morocco for leprosy and skin cancer.	Palmese et al., 2001; Egharevba and Ikhatua, 2008; BDMTM, 2009; Martínez and Barboza, 2010; El Mansouri et al., 2011; Ong et al., 2011; Akhtar et al., 2013; Sharma et al., 2014.
Allium sativum L.	ajo	no	0.13/fungal infections (54.5), calluses (18.2), psoriasis (18.2), skin bumps (18.2), warts (18.2), superficial infections (18.2), skin inflammation (9.1), varicose veins (9.1)	The bulb is crushed, and the paste is applied on affected skin area. Its alcoholic extract is applied externally on lesions. With the oily bulb extract ointments are prepared.	Sarrabus region, Italy, used against insect bites to lessen the pruritus. In North Pakistan for treating soothe irritation caused by scorpion and hornet stings. In Central Chaco, Argentina, for bites and warts. In Terengganu, Malaysia for treating stings, bites, and cuts. In Mexico, for warts, ringworm, varicose veins and insect stings.	Palmese et al., 2001; Andrade-Cetto, 2009; BDMTM, 2009; Martínez and Barboza, 2010; Ong et al., 2011; Akhtar et al., 2013.
Anacardiaceae						
Amphipterygium adstringens Schiede ex Standl. (256881)	cuachalalate	yes	0.15/cuts (92.3), skin inflammation (38.5), burns (15.4), rash (15.4), infections with abscesses (7.7), insect bites (7.7), skin bumps (7.7)	The decoction of its bark is taken orally and is also used for washing lesions. The aqueous bark extract is used for ointment preparation.	Mexican traditional medicine for wounds, pimples, scabs, bumps, abscesses, skin inflammation, hair loss and blemishes.	Cuevas Figueroa, 2005; BDMTM, 2009.
Schinus molle L. (256869)	pirul	no	0.02/cuts (50), psoriasis (50)	The alcoholic extract from leaves is used in fomentation form.	Mexican traditional medicine, as cicatrizing agent. In Brazil, as cicatrizing agent.	Oliveira et al., 2007; BDMTM, 2009.

Appendix: Continuation.

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Annonaceae						
Annona cherimola Mill. (256909)	chirimoyo	no	0.02/skin inflammation (50)	The infusion of leaves is taken orally.	Mexico for treatment of bruising, dandruff, skin infections and pimples.	BDMTM, 2009.
Apiaceae						
Eryngium beecheyanum Hook. f. & Arn. (256900)	hierba del sapo	yes	0.02/skin inflammation (100)	The infusion of the aerial part is taken orally. Additionally, it is used in fomentation form on skin.	Not reported.	
Apocynaceae						
Asclepias curassavica L. (256905)	dominguilla	no	0.08/skim bumps (57.1), warts (42.9), calluses (28.6)	The latex of leaves and stems is applied on the skin injury, avoiding contact with healthy skin.	Mexico, for treating skin bumps, scabies, erysipelas, edemas, stings of insects and wounds.	BDMTM, 2009.
Asphodelaceae						
Aloe vera (L.) Burm. f. (256851)	sábila	no	0.37/cuts (62.5), skin inflammation (28.1), hair fall (21.9), hematomas (21.9), burns (18.8), superficial infections (9.4), infections with abscesses (6.3), insect bites (6.3), skin bumps (6.3), fungal infections (3.1), psoriasis (3.1), skin care (3.1)	The pulp of the fresh or roasted leaves is applied on the affected area. The pulp is also used as shampoo.	broadly used for the treatment of dermatological affections. Used in Mexico, for skin swelling and erysipelas as cicatrizing agent. Additionally, it is used for sunburns, bumps and melasma. In Kelantan, Malaysia, it is used to prevent pimples and to smooth the skin. In district of Tamil Nadu, India, for hair growth. Israelis used it for wound healing. In Wayanad district, India for dandruff treatment.	Ong and Nordiana, 1999; Lev, 2006; Silja et al., 2008; Andrade-Cetto, 2009; BDMTM, 2009; Benítez et al., 2010.
Asteraceae						
Artemisia ludoviciana Nutt. (256888)	picanardo, prodigiosa	yes	0.07/skin inflammation (100)	The aerial part is used as tincture or infusion, using the oral dosage form.	Mexican traditional medicine for treating skin bumps and wounds.	BDMTM, 2009.
Artemisia mexicana Willd. ex Spreng. (256907)	estafiate	yes	0.02/skin inflammation (100)	The infusion of the aerial part is taken orally. The alcoholic extract of the aerial part is used in fomentation form on affected area.	Mexican traditional medicine, to relieve swelling of the feet.	Nicholson, 1991.
Bidens pilosa L. (256838)	aceitilla	yes	0.05/cuts (75), skin bumps (50), hair fall (25)	The infusion and decoction of the aerial parts are used for washing the affected skin area.	Mexican traditional medicine, for treating wounds, hair loss, skin irritation, skin inflammation, and burns. In Trinidad and Tobago for baby bath and cuts.	Andrade-Cetto, 2009; BDMTM, 2009; Lans, 2007.

Appendix: Continuation.

Scientific name (voucher specimen number in the herbarium IEB)	Vernacular name	Native plant of Mexico	Use Value/Dermatological conditions (fidelity level)	Mode of preparation by inhabitants from the Purépecha Plateau	Ethnomedicinal studies worldwide mentioning the use of the species for dermatological conditions	References
Calendula officinalis L. (256876)	caléndula, virreina	no	0.17/cuts (53.3), pruritus (26.7), skin inflammation (20), psoriasis (20), burns (13.3), insect bites (13.3), rash (13.3), superficial infections (13.3), blemishes (6.7), skin bumps (6.7)	The infusion of leaves and flowers is taken orally. Additionally, it is used in fomentation form and for washing the skin lesions. The alcoholic extract from leaves and flowers is applied in the affected skin area, being also used in ointment preparation.	Widely used for the treatment of skin diseases. In Eastern Sikkim Himalayan Region, it is used in healing wounds, ulcers and burns. In Turkey, this plant is reported in baths for dry skin. In Mexican traditional medicine, for treating wounds as disinfectant and antinflammatory agent.	BDMTM, 2009; Das et al., 2012; Ugulu, 2012.
Erigeron delphinifolius Willd. (256846)	árnica blanca	yes	0.08/skin inflammation (85.7), hematomas (14.3)	The infusion from its flowers and leaves is taken orally. Additionally, it is applied in fomentation form on the affected skin area.	Mexico, for treating hematomas.	Bello-González et al., 2015.
Heterotheca inuloides Cass. (256858)	árnica	yes	0.53/skin inflammation (56.5), hematomas (45.7), cuts (28.3), infections with abscesses (4.3), skin bumps (4.3), skin care (4.3), superficial infections (4.3), insect bites (2.2), rash (2.2), varicella (2.2), varicose veins (2.2)	The infusion from its leaves and flowers is taken orally being also used in fomentation form as well as for washing the affected skin area. The alcoholic extract is used on the skin, being a part of preparation of ointments. The infusions of the plant are used in a steam bath for skin health "temazcal".	Mexico, for the treatment of wounds, internal and external blows, bruises, cutaneous lesions, infected or not, such as pimples, sores, bruises, hives, baby scrapes, erysipelas and skin inflammation.	Navarro Pérez and Avendaño Reyes, 2002; Andrade-Cetto, 2009; BDMTM, 2009; Monroy-Ortiz et al., 2013; Bello-González et al., 2015.
Lactuca sativa L.	lechuga	no	0.03/rash (100)	The infusion of its leaves is used as a bath .	Jordanian traditional medicine, it is used as emollient and hair tonic.	Al-Khalil, 1995.
Matricaria recutita L. (256875)	manzanilla	no	0.12/cuts (30), rash (30), blemishes (10), hematomas (10), skin inflammation (20), pruritus (20), skin bumps (10), superficial infections (10)	The infusion of the aerial part of this plant, mainly its flowers, is used in fomentation form and for washing the skin area. The oily flower extract is applied at the injury site.	Its cosmetic value has been established through years of traditional use worldwide. In Mexico, it is used for scorpion stings, wound washing, removal of pimples and to lighten the hair. Among Albanians, Macedonians and Gorani in the Sharr Mountains, it is used for wound healing. In Kopaonik Mountain (Central Serbia) used externally for skin and mucous complaints (burns, wounds and ulcers). In the Potosi Department, Bolivia, it is used for wounds and acne.	Fernandez et al., 2003; Jarić et al., 2007; BDMTM, 2009; Rexhepi et al., 2013.

Appendix: Continuation.

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Montanoa tomentosa Cerv. (256859)	gobernadora	yes	0.03/rash (100), insect bites (66.7)	The infusion of the aerial part is taken orally, being used to wash the affected area.	Mexico, to treat a cultural disease called "burned" in which a woman may have blemishes, hematomas and skin inflammation after childbirth.	BDMTM, 2009; Gómez Aiza, 2013; Ávila-Uribe et al., 2016.
Piqueria trinervia Cav. (256861)	culikumanchicua	yes	0.01/cuts (100)	The infusion of its aerial parts is taken orally. Moreover, it is used for washing the affected skin area.	Mexico, it is used to treat skin bumps and hives, for washing wounds and controlling the measles and rash.	BDMTM, 2009.
Senecio salignus DC. (256877)	jara amarilla	no	0.06/hematomas (40), skin bumps (40), cuts (20), skin inflammation (20),	The decoction of flowers and leaves is used to wash the skin and in fomentation form on the affected area. The leaves are crushed with salt and the paste is applied on the injury site.	Abbotabad City, Pakistan used against snake bite and as antiseptic over wounds. It is also used for treating swelling of joints.	Sabeen and Ahmad, 2009.
Sonchus oleraceus L. (256879)	achicoria	no	0.03/cuts (100), burns (33.3)	The decoction of the aerial part is used in fomentation form and for washing the affected area. The aerial part is crushed, and the paste is applied at the site of injury.	Mexico, it is used for rash and blemishes treatment. Malayali tribes in Dharmapuri, India use it externally on wounds. In Italy and Spain, it is used for treating warts.	Guarrera et al., 2005; Ramya et al., 2008; BDMTM, 2009; Benítez et al., 2010; Bello-González et al., 2015.
Stevia serrata Cav. (256860)	hierba de burra	yes	0.03/rash (100), skin bumps (33.3)	The infusion of the flowers is taken orally and is used to wash the sites of injury.	Mexico used in cuts of feet.	Kinghorn, 2001.
Tagetes erecta L. (256847)	cempasúchil, guarecita	yes	0.03/cuts (66.7), rash (33.3)	The infusion of flowers and leaves is used for washing the skin. The flowers are rubbed directly on the affected area.	Mexican traditional medicine, for treating erysipelas, wounds, rash, sores, warts and pimples. In Bangladesh, for treating eczema, abscess, acne, boils, scabies, itch, infections, dermatitis, rash, sores, scar and warts. In Iran, for treating wounds.	Andrade-Cetto, 2009; BDMTM, 2009; Mollik et al., 2010; Amiri and Joharchi, 2013.
Tagetes filifolia Lag. (256840)	anís de grano	yes	0.07/skin bumps (83.3), cuts (16.7), rash (16.7)	The infusion of the grains is taken orally and is applied in fomentation form. The aerial parts are crushed, and the paste is applied at the injury site.	Mexico, it is used in baths for skin care. In Argentinian traditional medicine, for itch, and healing infected wounds.	BDMTM, 2009; Zacchino et al., 2012.

Appendix: Continuation.

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Tagetes lucida Cav. (256843)	santa María	yes	0.05/cuts (100), skin care (25), superficial infections (25)	The infusion of the aerial part is used for washing the affected area.	Mexican traditional medicine, for varicose veins and skin inflammation.	BDMTM, 2009.
Tagetes remotiflora Kunze (256839)	cinco llagas	no	0.05/cuts (100), superficial infections (50)	The infusion from the aerial part or roots is used for washing the affected area. The flowers and leaves are also used as infusion.	Not reported.	
Tanacetum parthenium (L.) Sch. Bip. (256896)	bola de hilo	no	0.01/insect bites (100)	The infusion from the aerial part is taken orally and used for washing skin lesions.	Mexico, for skin inflammation. In Iran for hair care.	Andrade-Cetto, 2009; Amiri and Joharchi, 2013.
Taraxacum officinale F.H. Wigg. (256852)	diente de león	no	0.03/infections with abscesses (66.7), rash (33.3)	The infusion from the aerial part is used for washing the affected skin, being also taken orally.	Mexican traditional medicine, for treating skin bumps, scabies, abscesses, acne and skin infections. In Central Italy for treating warts. In Himachal Pradesh, to cure boils.	Guarrera, 2005; Hurtado-Rico et al., 2006; Lal and Singh, 2008; BDMTM, 2009.
Tithonia diversifolia (Hemsl.) A. Gray (256922)	capitaneja	yes	0.06/cuts (40), infections with abscesses (40), superficial infections (40)	The infusion of flowers and leaves, for washing the skin affected area. It is also used for ointment preparation.	Mexico, it is used to cure bumps, sores and wounds. In addition, it is used for scabies, pimples, blackheads and for removing itching. Among Kalanguya tribe in Philipines for treating cuts and wounds. In Western Uganda, as antifungal and antibacterial agent .	Kamatenesi-Mugisha et al., 2008; BDMTM, 2009; Balangcod and Balangcod, 2011.
Boraginaceae						
Borago officinalis L. (256850)	borraja	no	0.07/skin inflammation (50), pruritus (33.3), rash (33.3), psoriasis (16.7), skin bumps (16.7)	The infusion of the aerial part is taken orally and used for washing the affected area. Additionally, it is used in fomentation form.	Malta, for skin disorders and minor wounds.	Caruana and Attard, 2016.
Tournefortia mutabilis Vent. (256856)	hoja de lija	yes	0.03/cuts (66.7), superficial infections (66.7)	The decoction of the aerial part is used for washing the affected area.	Not reported.	
Brassicaceae						
Lepidium virginicum L. (256908)	panalillo	yes	0.03/infections with abscesses (100)	The infusion of flowers and leaves is used for washing skin.	Mexican traditional medicine, it is used for rash, burns and scrapes.	BDMTM, 2009.

Appendix: Continuation.

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Burseraceae						
Bursera bipinnata (DC.) Engl. (256867)	copal	yes	0.03/superficial infections (100), cuts (66.7)	The resin is applied directly on the injured skin.	Mexican traditional medicine on wounds and skin infections.	BDMTM, 2009.
Commelinaceae						
Commelina diffusa Burm. f. (256889)	hierba de pollo	yes	0.03/cuts (100), insect bites (33.3)	The decoction of the aerial part is taken orally and used for washing skin. The leaves are crushed, and the paste is applied directly on the lesions.	South Orissa, India, to heal burn injuries, itches, and boils. In Nagaon District, to stop bleeding of wounds and cuts.	Sarma and Saikia, 2010; Panda and Misra, 2011.
Convolvulaceae						
Ipomoea murucoides Roem. & Schult. (256878)	cazahuate	yes	0.02/infections with abscesses (100), burns (50)	The infusion of flowers and stems is used for washing the affected area.	Mexico, it is used for the treatment of hair loss and rash as well as to remove nails and for managing scorpion stings.	Hurtado-Rico et al., 2006; BDMTM, 2009.
Equisetaceae						
Equisetum hyemale var. affine (Engelm.) A.A. Eaton (256870)	cola de caballo	yes	0.05/skin inflammation (50), hair fall (50), fungal infections (25)	The infusion of the aerial part is taken orally and used for washing skin. A shampoo is also prepared with this plant.	Not reported.	
Euphorbiaceae						
Euphorbia nutans Lag. (256885)	hierba de la golondrina	yes	0.05/rash (100)	The infusion of the whole plant is used in fomentation form, baths and for washing the affected skin area.	Croatia, for treating warts.	Pieroni et al., 2003.
Euphorbia pulcherrima Willd. ex Klotzsch (256865)	noche buena, pascua	yes	0.03/skin bumps (100)	Leaf and stem latex are applied directly on the skin lesion.	Mexico, for treating warts, erysipelas, sores, skin infections and wounds. For the management of inflammations and blows. In Lawachara National Park, Bangladesh, for cut injury. In Central Nepal to relieve boils, it is also useful for treating skin diseases.	BDMTM, 2009; Malla and Chhetri, 2009; Uddin et al., 2012.
Fabaceae						
Caesalpinia coriaria (Jacq.) Willd. (256903)	cascalote	no	0.03/cuts (66.7), skin bumps (33.3)	The decoction of the fruits is used in fomentation form and for washing the affected skin area.	Mexican traditional medicine for scabies and blemishes. In Tamilnadu, South India for treatment of acne.	BDMTM, 2009; Vivekraj and Anandgideon, 2015.

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Fagaceae						
Quercus rugosa Née (256835)	encino	yes	0.05/superficial infections (75), cuts (50), burns (25), infections with abscesses (25), psoriasis (25)	The decoction of its bark is used for washing skin.	Mexico, for treating sores, skin ulcers and bumps.	Luna-José et al., 2003; BDMTM, 2009.
Geraniaceae						
Geranium seemannii Peyr. (256887)	pata de león	yes	0.02/cuts (100)	The infusion of the aerial part is used for washing skin.	Mexican traditional medicine for urticaria, scabies, wounds and skin inflammation, sores, pimples, scabs, bruises.	BDMTM, 2009; Bello-González et al., 2015; Ávila-Uribe et al., 2016.
Lamiaceae						
Agastache mexicana (Kunth) Linf & Epling Det. B. Bedolla (256916)	toronjil	yes	0.05/skin inflammation (75), psoriasis (25), rash (25)	The infusion of the aerial parts is taken orally. Additionally, it is used in fomentation form and for washing the affected skin areas.	Mexico, for burns and insect bites. It is also used as antiseptic.	Andrade-Cetto, 2009; BDMTM, 2009.
Clinopodium macrostemum (Moc. & Sessé ex Benth.) Kuntze (256910)	nurite, te del monte	yes	0.07/skin inflammation (83.3), insect bites (16.7)	The infusion of leaves is taken orally, being also used in fomentation form and baths.	Not reported.	
Lavandula officinalis Chaix (256913)	lavanda	no	0.05/skin care (75), hair fall (25), pruritus (25)	The infusion of the aerial parts is used for washing the affected skin area. It is also used for lotion preparation.	Southern Italy, in the preparation of anti-varicose mixtures.	De Feo et al., 1992.
Leonotis nepetifolia (L.) R. Br (256919)	castilleja	no	0.02/cuts (100), superficial infections (50)	The infusion of the aerial part is used for washing the affected skin area.	Bidar district, India, it is used for treating head sores. In Eastern Himalayan region of India for treating burns. In Middle (Grand) Caicos, Turks and Caicos Islands (West Indies) for treating eczemas, wound and skin disorders.	Halberstein, 1997; Kala, 2005; Prashantkumar and Vidyasagar, 2008.
Lepechinia caulescens (Ortega) Epling (256929)	salvia	yes	0.06/skin care (60), cuts (40), superficial infections (20)	The infusion of the aerial part of this plant is used to wash the sites of injury and in a steam bath "temazcal". The flower and leaf lotion is applied over the affected area.	Mexico, it is used to treat swelling and blows.	Navarro Pérez and Avendaño Reyes, 2002; Bello-González et al., 2015.

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Marrubium vulgare L. (256911)	manrubio	no	0.05/skin inflammation (100)	The infusion from the aerial part of this plant is used in fomentation form.	Mexico, it is used for blemishes, scabies, pimples, wounds, fungus, measles, dandruff and in cases of hair loss. In Southern Italy, it is used as disinfectant for small wounds. In North of Morocco, used to treat abscesses, in Spain for erysipelas and herpes.	Navarro Pérez and Avendaño Reyes, 2002; Leporatti and Guarrera, 2007; BDMTM, 2009; Benítez et al., 2010; Khabbach et al., 2012; Juárez-Vázquez et al., 2013.
Ocimum basilicum L. (256912)	albahacar	yes	0.02/blemishes (50), rash (50)	The infusion of the aerial part is used for washing skin. The leaves are crushed, and the paste is applied to the affected area.	Mexico, for skin bumps and infections, pimples and hair loss against ascaris and sting of scorpion. Also, it is used for varicose veins. In Kali Gandaki Watershed Area, Nepal, for the treatment of fungal skin infections. In West Cameroon, it is used against mosquito bites.	Navarro et al., 1996; Joshi and Joshi, 2000; Jiofack et al., 2008; BDMTM, 2009.
Origanum majorana L. (256920)	mejorana	no	0.03/rash (100)	The infusion of the aerial part is used as a bath.	Samnium popular medicine, for treatment of small abscesses and bruises.	Forgione et al., 2008.
Rosmarinus officinalis L. (256918)	romero	no	0.16/hair fall (35.7), skin care (28.6), insect bites (14.3), hematomas (7.1), skin inflammation (7.1), psoriasis (7.1), rash (7.1),	The infusion of the aerial part is used for washing skin and in fomentation form. It is also used as a hot bath in the "temazcal". The alcoholic extract of the aerial part is used in fomentation form in the sites of skin injury.	Mexico, it is used for skin problems, to heal wounds, cancer sores and measles. Additionally, it prevents hair loss, serves to wash hair and against dandruff. It is also used to treat blows. In North Sahara, this plant is used for beauty care, hair care, against snake bites and as cicatrizing agent. In Spain as antinflammatory agent. In Morocco, for treating wounds and skin cancer.	Andrade-Cetto, 2009; BDMTM, 2009; Benítez et al., 2010; El Mansouri et al., 2011; Maiza et al., 2011; Khabbach et al., 2012.
Salvia amarissima Ortega (256915)	chan	yes	0.03/skin inflammation (66.7), rash (33.3)	The infusion from the aerial parts of this plant is taken orally. It is also used for washing the affected skin area.	Mexico, for hair care.	INEGI, 2014.
Salvia leucantha Cav. (256914)	salvia	yes	0.05/skin care (100)	With its flowers an ointment is prepared and applied directly on the skin.	Not reported.	

Appendix: Continuation.

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Salvia mexicana L. (256921)	contrabemberecua	yes	0.05/rash (75), insect bites (25)	The infusion of its leaves is taken orally and used in fomentation form and for washing skin. Leaves are directly rubbed on the affected skin area.	Mexican traditional medicine for treating skin bumps.	Navarro Pérez and Avendaño Reyes, 2002.
Salvia microphylla Kunth (256917)	mirto	yes	0.05/rash (50), hematomas (25) skin inflammation (25)	The infusion of the aerial part is taken orally, for washing skin and in fomentation form.	Mexico, it is used in dermal problems such as pimples, rash, measles and for treating scarlet fever.	BDMTM, 2009.
Lauraceae						
Persea americana Mill. (256873)	aguacate	yes	0.08/cuts (42.9), hematomas (28.6), skin inflammation (28.6) blemishes (14.3), hair fall (14.3),	The infusion and decoction of leaves and seeds are used in fomentation form and for washing skin. The fruit is crushed and directly applied on the skin area.	Mexico, for treating tinea pedis, scabies, rash, bruises, hair loss, wounds and sores. In Morocco, for hair care.	Hurtado-Rico et al., 2006; Andrade-Cetto, 2009; BDMTM, 2009; El Mansouri et al., 2011; Bello-González et al., 2015.
Malvaceae						
Ceiba aesculifolia (Kunth) Britten & Baker f. (256868)	pochote	yes	0.02/rash (100)	The infusion of its bark is taken orally.	Mexico, for treating dermatitis and snake bites.	BDMTM, 2009.
Malva parviflora L. (256848)	malva silvestre	no	0.13/rash (81.8), cuts (36.4), pruritus (18.2), skin inflammation (9.1), skin bumps (9.1)	The infusion of the aerial part or the whole plant is used for baths, washes and in fomentation form.	Mexico, it is used for treating the inflammation caused by blows, wounds or abscesses. Additionally, it is used for deep bumps, cuts or wounds, stings of poisonous animals or spiders, lesions on the lips and purulent abscesses. In Al-Rass province, Saudi Arabia, it is used for promoting hair growth. In Tigray region, Northern Ethiopia, it is used for treating anthrax.	Andrade-Cetto, 2009; BDMTM, 2009; El-Ghazali et al., 2010; Gebrezgabiher et al., 2013.
Sida haenkeana C. Presl (256849)	huinarí	yes	0.13/skin bumps (100), cuts (9.1), hematomas (9.1)	The flowers and leaves, mainly the leaves, are crushed with salt and the paste is applied on the affected area.	Not reported.	

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Meliaceae						
Azadirachta indica A. Juss. (256893)	neem	no	0.02/cuts (100), skin inflammation (50), psoriasis (50)	The infusion of the leaves is taken orally and used in fomentation form and for washing skin.	this plant appears in classical texts of Ayurveda for its positive effects on the skin. In Trinidad and Tobago, it is used for treating measles. In Morag, Nepal, it is used for scabies. In Coastal Karnataka, for wound healing and for managing herpes, scabies and ringworm. In Manipuri tribal community, Bangladesh, for skin diseases.	Van der Nat et al., 1991; Acharya and Pokhrel, 2006; Lans, 2007; Parvez Rana et al., 2010; Bhandary and Chandrashekar, 2011; Bhat et al., 2014.
Moraceae						
Ficus carica L. (256883)	higo	no	0.03/skin bumps (100)	The latex from leaves or stems is directly applied on the affected area.	Mexico for calluses, warts and hemorrhages. In North of Morocco, central Italy, and Spain, for treating warts.	Guarrera et al., 2005; BDMTM, 2009; Benítez et al., 2010; Khabbach et al., 2012.
Moringaceae						
Moringa oleifera Lam. (256836)	moringa	no	0.03/skin inflammation (100), infections with abscesses (33.3), psoriasis (33.3)	The infusion of the leaves is taken orally and used in fomentation form. The seeds are eaten.	Ugandan rural communities for treating skin diseases. In Karnataka, India for eczema and for treating sores at the tip of penis. In Madhupur forest region of Bangladesh, for treating sores.	Harsha et al., 2003; Manzur-ul-Kadir Mia et al., 2009; Kasolo et al., 2010; Bhat et al., 2014.
Musaceae						
Musa paradisiaca L.	plátano	no	0.06/fungal infections (40.0), skin inflammation (40.0), skin bumps (20.0)	The skin of the fruit is rubbed on the affected area. The seed is broken and the infusion of this is taken orally.	Mexican traditional medicine, as cicatrizing agent. In Lawachara National Park, Bangladesh, for cut injury. In Valsad district, Gujarat, it is used for calluses.	BDMTM, 2009; Shah et al., 2011; Uddin et al., 2012.
Myrtaceae						
Luma apiculata (DC.) Burret (256872)	arrayán	no	0.03/rash (66.7), skin bumps (33.3)	The infusion of the aerial part is used for washing skin.	Chile and Ecuador, for the skin care of women after childbirth.	Torri, 2013.
Psidium sartorianum (O. Berg) Nied (256892)	bella rosa	yes	0.01/rash (100)	The infusion of its aerial parts is used for washing skin.	Mexican traditional medicine for scabies, hematomas, as cicatrizing and haemostatic agent.	BDMTM, 2009.

Appendix: Continuation.

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Onagraceae						
Oenothera rosea L'Hér. ex Aiton (256845)	hierba del golpe	yes	0.21/hematomas (94.4), inflammation (33.3), cuts (5.6), rash (5.6)	The infusion of the aerial part is used for washing skin and in fomentation form on the affected area. The aerial part is crushed, and the paste is applied on the site of injury.	Mexican traditional medicine for treating apparent skin conditions such as infected lesions, bumps, sores, itching, erysipelas and scabies.	Navarro Pérez and Avendaño Reyes, 2002; Hurtado-Rico et al., 2006; Andrade-Cetto, 2009; BDMTM, 2009; Bello-González et al., 2015.
Papaveraceae						
Argemone ochroleuca Sweet (256880)	chicalote	yes	0.02/superficial infections (100), cuts (50)	The decoction of the aerial part is used for washing skin. The alcoholic extract of the aerial part is applied in fomentation form.	Mexico, it is used for the treatment of ringworm, scabies, hair loss, pimples, hives and warts. In Hawassa city, southern Ethiopia, for wound healing.	BDMTM, 2009; Regassa, 2013; Ávila-Uribe et al., 2016.
Bocconia arborea S. Watson (256901)	inguambo	yes	0.13/cuts (72.7), hematomas (36.4), skin inflammation (18.2)	The decoction of the bark is used in fomentation form and for washing skin. A piece of bark is placed in water and taken orally.	Mexican traditional medicine, for the treatment of scabies and warts.	BDMTM, 2009.
Phytolaccaceae						
Phytolacca icosandra L. (256897)	conguera	yes	0.05/superficial infections (50), cuts (25), psoriasis (25), skin care (25)	The infusion of the aerial part is used for washing skin. The leaves and fruits are rubbed directly in the area.	Mexico, it is used to prevent hair loss, against ringworm, measles, and dandruff. Additionally, it is used against the fungi and for treating skin bumps or wounds.	BDMTM, 2009; Bello-González et al., 2015; Ávila-Uribe et al., 2016.

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Plantaginaceae						
Plantago major L. (256841)	llantén	no	0.05/cuts (75), infections with abscesses (50), superficial infections (50), skin inflammation (25), psoriasis (25)	The infusion of the aerial part is used in fomentation form and for washing skin.	Mexico, as an anti-inflammatory for bumps, wounds, mumps and abscesses. For pimples, wounds and purulent sores, to suppress hematomas. At Arunachal Pradesh, India for treating wound and inflammations. In Kurdish ethnomedicine, it is used topically by its analgesic, antinflammatory and wound healing properties. Among Croatians living in Northern Istria, it is applied externally as hemostatic and cicatrizing agent. In Zangelanlo district, Northeast Iran, for treating skin allergies. In Iran, for treating eczema.	Guarrera et al., 2005; Pieroni and Giusti, 2008; BDMTM, 2009; Das et al., 2012; Amiri and Joharchi, 2013; Tahvilian et al., 2014.
Poaceae						
Avena sativa L.	avena	no	0.02/skin bumps (50.0), skin care (50.0)	The seed is soaked in water and ground, the resulting paste is used for preparing a soap that is applied on the skin area.	Mexican traditional medicine, for treating wounds, skin impurities and melasma. In Iran, for treating acne.	BDMTM, 2009; Amiri and Joharchi, 2013.
Zea mays L. (256855)	maíz	yes	0.02/fungal infections (100)	The supernatant of its nixtamalization called "nejayo" is used to wash the affected area.	Mexico, for skin care and as a hot bath in the "temazcal". In Iran, as anti-inflammatory agent.	BDMTM, 2009; Amiri and Joharchi, 2013.
Polemoniaceae						
Loeselia mexicana (Lam.) Brand (256864)	espinosilla	yes	0.08/hair fall (42.9), skin inflammation (28.6), insect bites (28.6), varicella (28.6), fungal infections (14.3)	The infusion of the aerial part is taken orally, being also used in baths and washes.	Mexico, for hair loss, dandruff, oily hair, erysipelas, rubella, abscesses, and varicose veins.	BDMTM, 2009; Bello-González et al., 2015; Ávila-Uribe et al., 2016.
Polygonaceae						
Polygonum capitatum Buch.-Ham. ex D. Don (256886)	hierba de la golondrina	no	0.05/rash (50), hematomas (25), skim bumps (25)	The infusion of the whole plant is used for washing skin and baths.	Uttar Pradesh, India, for treating boils.	Singh, 1997.

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Proteaceae						
Macadamia integrifolia Maiden & Betche (256891)	nogal de macadamia	no	0.03/hair fall (66.7), cuts (33.3)	The decoction from leaves is used in washing skin.	Brazilian traditional medicine, it is used against vitiligo.	Okuma et al., 2011.
Rosaceae						
Eriobotrya japonica (Thunb.) Lindl. (256853)	níspero	no	0.02/cuts (100), superficial infections (100)	The infusion from its leaves is used for washing skin.	Mexican traditional medicine, for treating varicose veins. In Jammu District, India, for the treatment of skin diseases.	BDMTM, 2009; Priya and Sharma, 2014.
Prunus persica (L.) Batsch (256866)	durazno	no	0.03/rash (100), hematomas (33.3)	The infusion of its leaves is taken orally. It is also used for washing skin.	Mexico, for dry skin, rash, scrapes and wounds.	Andrade-Cetto, 2009; BDMTM, 2009.
Rosa gallica L. (256842)	rosa de castilla	no	0.08/skin bumps (57.1), rash (42.9), pruritus (28.6), blemishes (14.3)	The infusion of its flowers is taken orally. Additionally, it is used for washing skin and in fomentation form.	Mediterranean coast of Spain, its petals are a part of an ointment used for skin diseases.	Pascual, 1994.
Rutaceae						
Citrus aurantifolia Swingle	limón	no	0.06/blemishes (20), cuts (20), fungal infections (20), infections with abscesses (20), psoriasis (20)	The juice of the fruit is used in infusions and ointments to be applied on the affected area. The juice is placed in a copper bowl and allowed to stand overnight to be applied to the skin area in the morning.	Mexican traditional medicine, for treating skin spots and scabies. In Kelantan, Malaysia, for dranfurt treatment. In coastal parts of Karnataka, India, for boils. In Hmar tribe, in India for purulent boils. In Nicaragua Atlantic Coast for itching.	Barrett, 1994; Ong and Nordiana, 1999; BDMTM, 2009; Nath and Choudhury, 2010; Bhat et al., 2014.
Ruta graveolens L. (256890)	ruda	no	0.08/hematomas (28.6), rash (28.6), skin inflammation (14.3), psoriasis (14.3) skin bumps (14.3)	The infusion of the aerial part is used for washing skin and in fomentation form. The aerial part is roasted and placed in alcohol for foments. Fresh leaves are rubbed directly into the affected area.	Mexico, for treating varicose veins and wounds. In Mediterranean traditional medicine, against acne and as a topical analgesic.	Pollio et al., 2008; BDMTM, 2009.
Salicaceae						
Salix bonplandiana Kunth (256902)	eucalipto	yes	0.03/skin care (66.7), skin inflammation (33.3)	The infusion of the leaves is used as a hot bath in the "temazcal". The alcoholic extract from the leaves is used in fomentation form.	Mexican traditional medicine, for treating gangrene.	BDMTM, 2009.
Scrophulariaceae						
Buddleja sessiliflora Kunth (256904)	tepoja	yes	0.02/hair fall (100), rash (50.0)	The root is crushed and applied on the area. Root decoction is taken orally and used for washing skin.	Mexico, it is used in swellings, varicose veins and for healing wounds.	BDMTM, 2009.

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Schisandraceae						
Illicium verum Hook. f.	anís estrella	no	0.10/skin bumps (100), rash (33.3), pruritus (11.1)	The infusion of its fruits is taken orally and used for washing skin and in fomentation form.	Malaysia, it is used in a mixture for itching.	Ong and Nordiana, 1999.
Solanaceae						
Brugmansia suaveolens (Humb. & Bonpl. ex Willd.) Sweet (256884)	florifundio	no	0.03/hematomas (33.3), infections with abscesses (33.3), skin inflammation (33.3)	The infusion of its flowers and leaves is used in fomentation form and for washing skin.	Among Zapotecs of the Isthmus-Sierra (Oaxaca, Mexico), it is used for dermatological illness. In Sarban Hills, Abbottabad, KP, Pakistan, for treating skin disorders.	Frei et al., 1998; Ijaz et al., 2016.
Nicotiana tabacum L.	tabaco	no	0.02/fungal infections (50), psoriasis (50)	The ash from the cigarettes is placed on the affected skin area.	Mexico, for treating wounds, bruises, burns, pimples, rash, erysipelas, dermatitis, scabies, insect bites, herpes and inflammation. In Southern Ethiopia, against skin infections and external parasites. Among the tribals of Mizoram, India, for treating leucoderma, wounds and cuts	Bhardwaj and Gakhar, 2005; BDMTM, 2009; Tolossa et al., 2013.
Physalis pubescens L. (256874)	tomate	yes	0.08/rash (100)	The infusion of the fruit, mainly the shell, is used for baths and for washing skin.	Mexican traditional medicine, for treating wounds. In Spain, for burns.	BDMTM, 2009; Benítez et al., 2010.
Solanum nigrescens M. Martens & Galeotti (256857)	hierba mora	yes	0.09/rash (87.5), skin bumps (12.5), varicella (12.5)	The infusion of fruits and leaves is used for baths and for washing skin. The fruits are rubbed directly on the affected area.	Mexico, for wounds, eczema, erysipelas, bruises, rash, wounds, burns, abscesses, pimples, inflammation, insect bites, healing and hair care.	Navarro Pérez and Avendaño Reyes, 2002; Andrade-Cetto, 2009; BDMTM, 2009; Ávila-Uribe et al., 2016.
Solanum tuberosum L.	papa	no	0.05/burns (75), insect bites (25)	The tuber shell is rubbed in the area.	Mexico, to treat dandruff, hair loss, burns, swellings. In North of Morocco, for the treatment of burns. In Bangladesh, for swelling and skin rashes. In Romania, for wounds and swelling.	Pieroni et al., 2003; BDMTM, 2009; Khabbach et al., 2012; Mahbubur Rahman et al., 2015.

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Tropaeolaceae						
Tropaeolum majus L. (256895)	mastuerzo	no	0.03/cuts (33.3), hematomas (33.3), Infections with abscesses (33.3), skin inflammation (33.3), superficial infections (33.3)	The infusion of the aerial part is used in fomentation form. The alcoholic extract from the seeds is used for washing skin affected area.	Mexico, for treating melasma and skin bumps. The Angami Tribe, India, used it to cure boils. Used in Uruguay, to prevent hair fall and dandruff, for inflammation, small burns and skin infections.	BDMTM, 2009; Grosso, 2010; Chase and Singh, 2013; Ávila-Uribe et al., 2016.
Urticaceae						
Urtica subincisa Benth. (256906)	ortiga	yes	0.17/skin inflammation (80), varicose veins(60), skin bumps (6.7)	The alcoholic extract of the aerial part is applied in the form of fomentations. The infusion of its leaves is taken orally.	Not reported.	
Verbenaceae						
Aloysia citrodora Paláu (256894)	cedrón	yes	0.03/skin inflammation (100)	The infusion of the leaves is taken orally and applied in fomentation form.	Southwest of Morocco, it is used for skin care	Ouhaddou et al., 2015.
Verbena carolina L. (256854)	verbena	yes	0.06/hair fall (100)	The infusion of the whole plant is used to wash the area.	Mexico, it is used to treat hair loss, dandruff, rash, bruising, skin infection, pimples and wounds.	Navarro Pérez and Avendaño Reyes, 2002; BDMTM, 2009; Bello-González et al., 2015.