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Medicinal plants used to treat infectious and non-infectious diseases of skin and skin appendages in city of Urmia, northwest Iran

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ABSTRACT

Human has been always seeking for beauty of skin and face and the best possible treatments for skin diseases. Indeed, use of medicinal plants is an important approach to treat skin diseases. The present study was conducted to identify effective medicinal plants on skin diseases in Urmia, a city of northwest Iran. This study was done through questionnaire-assisted interview with local people from September, 2014 to January, 2015. First, a complete list of groceries across Urmia was obtained. Then common and effective properties for treatment of skin diseases were generated. The questionnaires consisted of items regarding the grocers' demographic data and an empty list of native plants and/or items on used parts, the methods of use, and traditional therapeutic effects. After data analysis, 22 plants from 17 families, used for skin healthcare, were generated. Asteraceae and Scrophulariaceae families had most effective plants on skin diseases in Urmia. The plants were mostly used as boiled (56%). Leaves (22%) were mostly used part to treat skin diseases in Urmia. The plants presented in the present study contained bioactive substances and further studies are needed to investigate the efficacy and potential toxic effects of the medicinal plants of use because of the significance of these plants, and a step could be taken to develop natural and effective drugs for skin healthcare.

Keywords: Skin, medicinal plants, Urmia, Iran

INTRODUCTION

Skin is one of the largest human body organs protecting the body against a variety of environmental pollutants. Most of these pollutants may lead to oxidative stress which could exacerbate skin diseases. Human has been always seeking for beauty of skin and face and the best possible treatments for skin diseases. Firstly natural substances (soil, flower, etc) and then chemical products, synthetic compounds, hormones, and a variety of methods were used [1]. Skin injuries affect beauty and are paid much attention, and the drugs and substances capable of enhancing speed and quality of recovery are more frequently welcome [2]. Recent medical approaches to applying natural approaches to preventing and treating diseases have been welcome by traditional medicine in different nations and ethnicities [3-10]. History of medicinal plants use for treatment of diseases by human has not been yet clearly known. However Egyptians and Chinese are among the pioneering nations who have used plants as medication since 2700 years age. Most of these plants are still being used [11-19].

Uses of medicinal plants are one of the most important subdisciplines of botany and a bridge toward clinical pharmacology. Transformation of the data on medicinal plants from oral knowledge into written literature is the

main purpose of this article, because protection of genuine data regarding the region's medicinal plants is highly important and preventing these data from elimination is our main mission [20-27]. Studies indicate that over 80% of people worldwide use traditional medications in treating their diseases and over 1/3 of the currently used drugs are plant-derived [28-34]. In fact, use of medicinal plants is an important approach to treating skin diseases [35]. There are many medicinal plants that exert high antioxidant activity, contributing greatly to fighting free radicals as the main reason for several adverse changes in skin [36,37].

Since skin and skin appendages are considered as one of the most important body's organs and first line of defense, skin diseases are highly prevalent and medicinal plants are particularly used for prevention of skin diseases and skin healthcare, then this study seeks to identify the medicinal plants of such uses in Urmia.

MATERIALS AND METHODS

Region of study

Khiregah-e Jangali, Ghasemloo Valley and neighboring regions with a 577-hectare area is located on the right side of Urmia-Oshnavieh road at 30 km in southern Urmia County. This mountainous region is located between 45°5' and 45°10' east longitude from the Greenwich meridian and 37°15' and 37°20' north latitude from the equator. The lowest point is 1,420 meters and the highest peak is 2280 meters above sea level.

In view of meteorological data and annual moisture conditions of the soils, the studied region enjoys a xeric irrigation regime and mesic thermal regime [38]. From climatic perspective, Urmia is considered as a semiarid and cold region. Mean annual precipitation is 367.5 mm, mean highest temperature 33.1°C, and mean lowest temperature -15.5°C. *Bahman* (January-February) is the coldest month and *Mordad* (July-August) is the hottest month of the year in this region [39].

Method

This study was conducted by questionnaire-assisted interviews with local people from September, 2014 to January, 2015. First, a complete list of groceries was obtained from Food and Drug Department of Urmia University of Medical Sciences. Direct observation and interviews alongside herbarium specimens of native medicinal plants, common and effective properties for treatment of disorders, and various symptoms of skin diseases were used. The questionnaires consisted of items regarding the grocers' demographic data and empty list of native plants and/or items on used parts, the methods of use, and traditional therapeutic effects.

Herbarium samples were prepared and sent to research centers of Urmia Agricultural Jihad and Faculty of Agriculture, University of Urmia after they were dried. Then the samples were identified and their species were determined by Flora and reliable references [39-43].

Data analysis

The data were analyzed by Excel 2010.

RESULTS

After data analysis, 22 plants from 17 families, effective on skin healthcare, were generated. Table 1 summarizes the data on these plants including family and parts and methods of use.

Table 1. Medicinal plants effective on diseases of skin and skin appendages used in city of Urmia

Row	Scientific name	Family	Persian name	Used part(s)	Method(s) of use	Traditional therapeutic effect
1	<i>Amygdalus communis</i>	Rosaceae	Badam-e shirin	Green fruit and seed	Boiled, brewed, raw	Anti-hair loss
2	<i>Anthemis tinctoria</i> L.	Asteraceae	Baboone-ye zard	Flowering shoot	Boiled, brewed, Paste	Beauty and clarity of the skin, strengthening of hair roots
3	<i>Artemisia sieberi</i> Besser	Asteraceae	Dermaneh	Flowering shoot	Boiled, brewed, Paste	Baldness
4	<i>Ceterach officinalis</i>	Phillicineae	Sarakhs	Aerial parts	Paste	Head itching
5	<i>Cichorium intybus</i> L.	Asteraceae	Kasni	Root, leaves, flower and seeds	Boiled	Head itching
6	<i>Colchicum kotschyi</i> Boiss.	Liliaceae	Gol-e hasrat	Flower	Paste	Lice
7	<i>Convolvulus arvensis</i> L.	Convolvulaceae	Pichak-e sahraee	Aerial parts	Paste	Skin spots
8	<i>Datura stramonium</i> L.	Solanaceae	Tatureh	Seed	Boiled and Paste	Wound healing, wound disinfection
9	<i>Equisetum arvense</i> L.	Equisetaceae	Dom-e asb	Aerial parts	Boiled	Hair loss, nails strengthening
10	<i>Euphorbia macroclada</i> Boiss.	Euphorbiaceae	Ferfion	Leaves	Paste	Wart
11	<i>Fumaria asepala</i> Boiss.	Fumariaceae	Shahtareh	Aerial parts	Boiled	Head and face itching, allergy, face acne
12	<i>Hibiscus trionum</i> L.	Malvaceae	Khatmi-e seh rang	Flower	Boiled, boiled and brewed for washing	Head itching, strengthening of hair root
13	<i>Hypecum pendulum</i>	Apiaceae	Shah tare	flowering shoot	Boiled	Skin allergy
14	<i>Ixillirion tataricum</i> (Pall.) Roem et Schult	Amaryllidaceae	Khiaarak	Gland, flowering shoot	Paste	Washing of skin abscess and disinfection of infectious wounds
15	<i>Juglans regia</i>	Juglandaceae	Gerdou	Fruit, trunk palm, leaves	Boiled	Anti-allergic, hematopoietic
16	<i>Linum usitatissimum</i> L.	Linaceae	Katan	Seed	Boiled	Bedsore
17	<i>Rubia tinctorum</i> L.	Rubiaceae	Ronnas	Root, fruit	Boiled	Hair loss, hair coloring
18	<i>Sanguisorba minor</i> Scop.	Rosaceae	Tout-e roubahi	Fruit	Boiled and edible raw	Skin wounds disinfection
19	<i>Verbascum agrimonifolium</i>	Scropholariaceae	Gol-e mahour	Leaves, flower	Boiled	Wound microbial infection
20	<i>Verbascum macrocarpum</i> Boiss.	Scropholariaceae	Gol-e mahour	Leaves, flower	Boiled	Nails fungal infection
21	<i>Verbascum speciosum</i> Schord.	Scropholariaceae	Gol-e mahour	Leaves, flower	Paste	Wound microbial infection
22	<i>Vaccaria oxydonta</i> Boiss.	Caryophyllaceae	Sabounak-e dane-ye zard	Flower	Boiled	Skin allergy and constipation

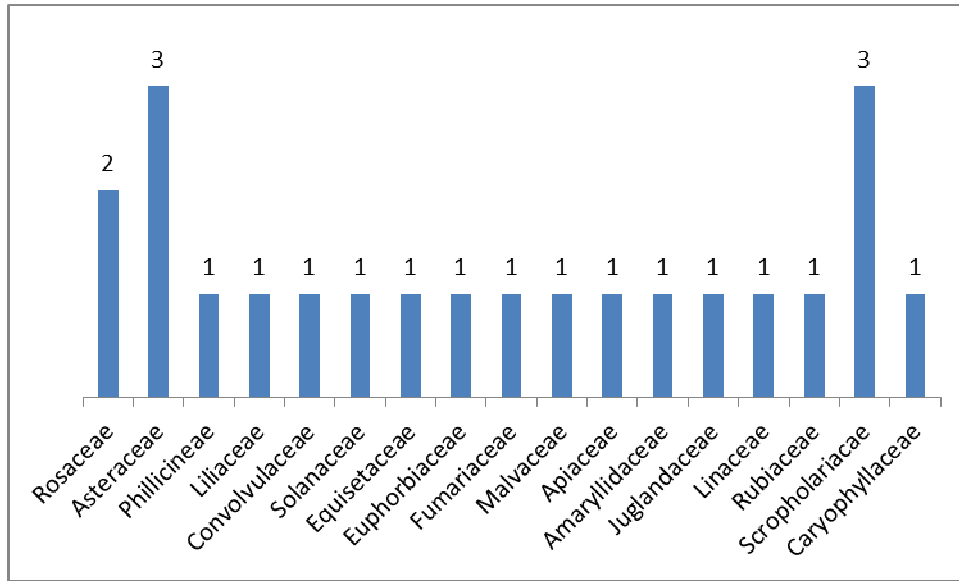


Figure 1. Number of plant families effective on skin healthcare in city of Urmia

Figure 1 illustrates that Asteraceae and Scrophulariaceae families have most effective plants on skin diseases in Urmia.

The most frequent method of use was boiling (56%). Figure 2 indicates further details.

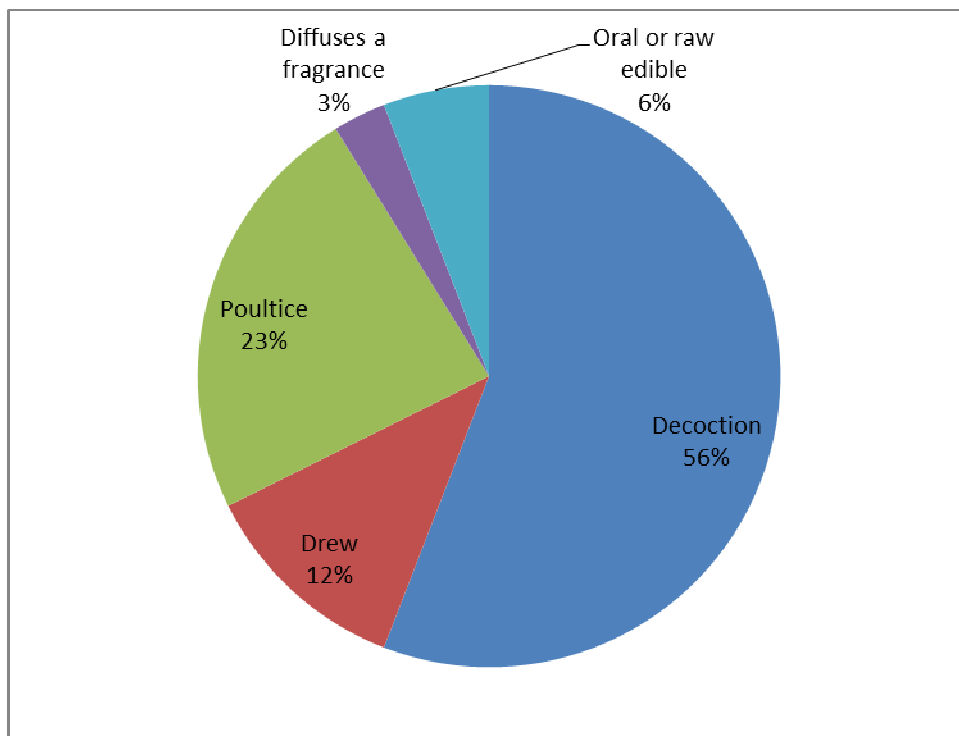


Figure 2. Percentage of traditional methods of use of medicinal plants used for skin diseases in Urmia

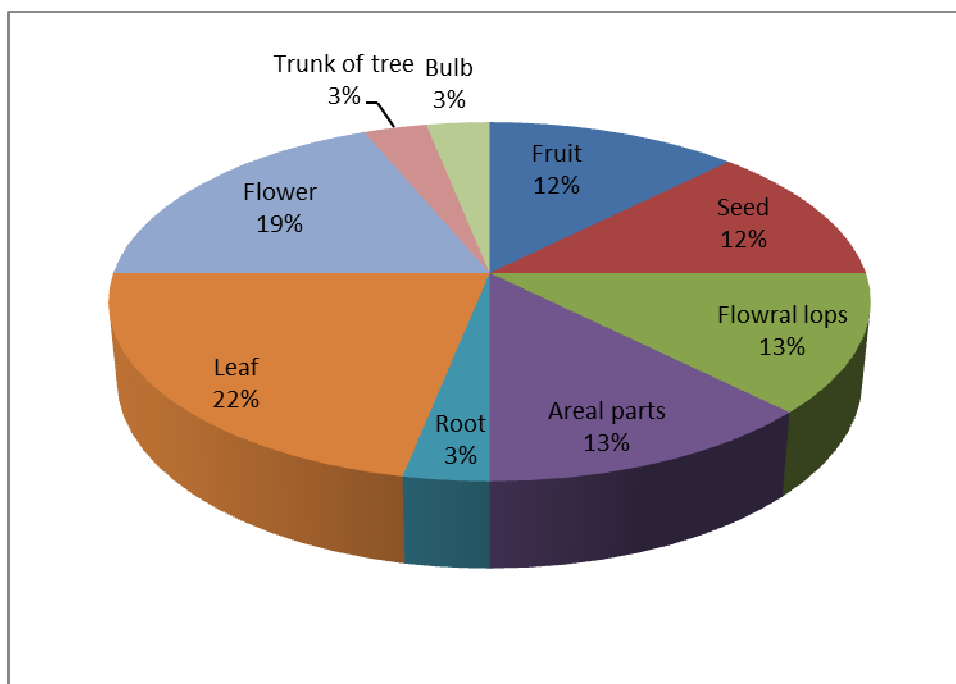


Figure 3. Percentage of used plant parts for skin diseases in Urmia

This study indicated that leaves (22%) were mostly used plant part to treat skin diseases in Urmia. Graph 3 illustrates further information on the percentage of used plant parts for treatment of skin diseases.

DISCUSSION

This study indicated that 22 plants from 17 families were effective on skin healthcare.

In Arasbaran, *Achillea millefolium* L. is used as antiseptic, *Euphorbia helioscopia* L. to treat warts, *Lamium album* L. as anti-skin swelling, *Origanum vulgare* as antiseptic, *Verbascum phlomoides* and *Sanicula europaea* to heal wounds, and *Heracleum persicum* to treat skin diseases [44]. In Sistan and Balouchestan traditional medicine, *Alhagi persarum*, *Plantago lanceolata* L., and *Prosopis fracta* are used to heal wounds, *Aloe vera* L. for skin diseases and wounds, *Avena sativa* L. as antiseptic, *Malva sylvestris* L. and *Nerium oleander* L. for skin diseases [45]. By traditional knowledge in Kazeroun, *Senecio gallicus* is used to heal chronic wounds, *Citrullus colocynthis* to treat skin diseases, *Euphorbia helioscopia* to treat warts, *Ocimum basilicum* L. to treat mouth ulcers, *Alcea aucheri* and *Ziziphus spinachristi* to prevent hair loss, *Olea europaea* L. to treat sunstroke, *Bromus tectorum* L. to heal wounds, *Polygonum patalum* to treat burns, and *Urtica pilulifera* L. to treat acne [46]. In traditional herbal medicine of Kashan, *Centaurea gauba* is used to heal wounds, *Fumaria parriflora* Lam. to remove eczema, and *Myrthus communis* L. as anti-hair loss [47]. In Kerman ethnobotany, *Amygdalus scoparia* and *Amygdalus eburnean* are used to prevent hair loss, *Berberis integerrima* to treat hives, *Cercis siliquastrum* to wash infected wounds, *Citrullus colocynthis* to heal wounds, *Datura stramonium* to treat burns, *Faba vulgaris* to treat abscesses, *Lawsonia inermis* to treat cracks of hand and foot, *Linum usitatissimum* to treat abscesses, *Scrophularia scopolii* to treat gangrenous wounds, *Sesamun indicum* to strengthen hair, and *Ziziphus spinachristi* to prevent hair loss [48]. By ethnobotany of Mobarakeh, Isfahan, *Cichorium intybus* L., *Salvia nemorosa* L., *Arctium minus* Hill., *Myrthus communis* L., *Triticum aestivum* L., and *Aloe perfoliata* Mill. are used to treat acne, *Triticum aestivum* L. and *Spinacia oleracea* L. to treat freckles, *Arctium minus* Hill. to treat baldness, *Myrthus communis* L. to treat cracks of hand and foot, *Achillea santolina* and *Matricaria recutita* L. to prevent hair loss, *Allium sativum* L., *Nigella sativa* L., and *Ricinus communis* to treat warts, *Ziziphus jujuba* (L) H. Karst, *Achillea santolina*, and *Alcea arbelensis* Beiss as anti-itching for body's and head's skin, *Eucalyptus camaldulensis* Dehnh and *Nigella sativa* L. to treat skin cancer, and *Lawsonia inermis* L. to strengthen eyebrows [49]. In Ilam Province's phytopharmacology, *Adiantum capillus-veneris* and *Isatis raphanifolia* Boiss are used to dye hair, *Amygdalus lycioides* Spach and *Astragalus gossypinus* to strengthen hair, *Aristolochia olivieri* to treat skin injuries, eczema and wound, *Cichorium intybus* to treat skin disorders, *Citrullus colocynthis*, *Echium italicum* L., *Tamarix ramosissima*, *Myrthus communis* L., *Verbascum alepense* and *Scrophularia striata* to heal wounds, *Datura innoxia* Miller. and *Euphorbia macroclada* to treat warts, *Fumaria parviflora* Lam. to treat skin disorders and to heal wounds and eczema, *Nerium oleander* L. to heal cuts and eczema, *Salvia palaestina* Benth. to treat skin cuts, *Seidlitzia rosmarinus* and *Ziziphus spinachristi*

to boost hair growth, and *Solanum nigrum* L. to treat skin lesions and eczema [50]. In ethnopharmacology of Lorestan Province, *Althaea officinalis* is used for wound healing, *Artemisia annua* for treatment of warts, *Cherophyllum obliquum* to treat herpes, *Citrus limonum* to treat itching, *Equinops* spp. for skin wound, *Mentha longifolia* for skin allergies, *Narcissus papyraceus* and *Peganum harmala* for wound healing, *Picromon acarna* for treatment of freckles and acne, *Urtica dioica* to treat itching, and *Pistacia khinjuk* to disinfect wounds [51]. Comparison of ethnobotany knowledge between Urmia and other regions in (north, south, east, west, southwest, and central) Iran indicates that in different cultures, different medicinal plants are used for skin healthcare. A number of plants in different cultures in Iran have common therapeutic effects. However the results of our study showed that many plants exert new therapeutic effects.

Although a particular effective substance has been introduced for some plants, it has not been obviously explained that which mechanisms are involved in treating skin diseases. Clearly, most skin diseases are associated with oxidative stress [51-54]. The environmental pollutants and their metabolites cause increased production of various reactive oxidants. During normal metabolism, low levels of reactive oxygen species (ROS) are constantly produced. However, in certain conditions (e.g. inflammation) large amounts of ROS are released destroy invading microorganisms and/or to degrade damaged tissue structures. The imprecise targeting of free radicals cause oxidative stress in adjacent normal cells and tissues, resulting in severe damage [54-56]. Antioxidant defense systems fight the destructive effects of free radicals and hence mitigate tissue damage. Despite antioxidant defense mechanisms, free radicals at high levels can damage DNA, proteins, and other macromolecules. Many age-dependent diseases such as neurodegenerative disorders [57,58], atherosclerosis [59-62], diabetes [63-68] and cancer [69-72] involve ROS during some stage of their progression. Antioxidants act against these free radicals and prevent severe damage to the body [72-79]. There are many medicinal plants which exert antioxidant properties [80-87]. These plants may act, at least to some extent, by this mechanism.

In various cultures worldwide, particularly rural areas with limited access to drugs, people use domestic treatments. The plants presented in the present study contained bioactive substances and hence are recommended as natural therapies because of the significance of medicinal plants. Further studies are needed to investigate the efficacy and potential toxic effects of the medicinal plants of use, so that a step could be taken to develop natural and effective drugs for skin healthcare. It is necessary to examine the pharmacological effects of above mentioned plants in clinical trials for development of useful natural drugs, if therapeutic and pharmacological properties of interest were adequately confirmed.

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