

## Survey on Use of Herbs and Related Medicines in Different Skin Disorders and Concepts Regarding Herbal Toxicity

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### Abstract

Prevalence of skin diseases (atopic dermatitis, allergic contact dermatitis, acne, pigmentation, eczema, skin inflammation, psoriasis, leukoderma) is very common in Karachi city. There are different systems of medicines available to treat such diseases. Among these therapies, traditional system of medicines utilizing medicinal herb and other medicaments of natural origin is very popular. A small scale demographic survey was conducted to gather data regarding the use of herbs and related medicinal product in various skin disorders. The entire survey report showed that 86% participants prefer herbal drugs in skin diseases, and almost 84% were satisfied with this treatment. Moreover due to the presence of phytochemicals acting as active constituent of herbal drugs, these drugs may render to adverse reactions, toxicities. However this concept about toxicity of herbs is usually misunderstood, and people considered them completely safe. 90% participants have misperception that being natural in origin these drugs are completely safe, that is

dangerously false concept. 35% users utilize herbs and conventional medicines simultaneously, that may lead to severe consequences especially herb- drug interactions. This survey will help in gathering data about use of herbal drugs in topical diseases, and to make awareness about the toxicity and safety issues of herbs for better effectiveness and safe use of traditional medicines.

### Keywords

Skin Diseases, Traditional Medicines, Medicinal Plants, Demographic Survey, Herb-Drug Interaction, Toxicity.

### 1. INTRODUCTION

Skin diseases remain a major burden on health care system worldwide. Skin is the exterior organ of human body exposed to various external factors responsible for various disease conditions. These external factors range from rough and dry weather, exposure to allergens, to different pollutants. Atopic and contact dermatitis, eczema,

rashes, acne, skin pigmentation problem, skin cancer, psoriasis, cellulites are manifestations of skin diseases. On the other hand some internal factors like deficiency of nutrients, dehydration, autoimmune conditions also make skin vulnerable to problems. Last but not the least, infectious and inflammatory skin diseases are also much prevailed (Karimkhani C *et al.*, 2017; Laughter R. *et al.*, 2017; Kruger C *et al.*, 2012; Larsson PA *et al.*, 1980).

Apart from regular conventional therapies, there is a marked trend of treating these diseases with the help of herbs and the related medicinal products of natural origin. Medicinal plants contain active phytochemical constituents that exhibit different medicinal actions responsible for therapeutic uses. Alkaloids, flavonoids, tannin, saponin, sterols produce different actions like antimicrobial, emollient, nutrient, anti pigmentation, anti acne, anti oxidant, and anti aging to resolve skin problems (Moteete A *et al.*, 2017; Nciki *et al.*, 2016; Nahida T *et al.*, 2014; Malik K *et al.*, 2014; Alamgeer *et al.*, 2018). Table 1 represents various medicinal plants that have been employed to treat different skin diseases. Drugs originating from natural resources are generally misinterpreted as safe without any toxic manifestations to the body. But actually there are some intrinsic and extrinsic factors that may produce ill effects (Moereira. D *et al.*, 2014).

The objective of this study is to find the prevalence of skin diseases treated with drugs of natural origin especially herbs and related problem. Moreover questions related to the concept of their effectiveness and possible harmful effects were also asked to know the general perception regarding their safe and successful use.

## 2. MATERIALS AND METHOD

A small scale demographic survey was done to identify the trend of using herbal medicines

for skin diseases. Participants (500) took part in this survey belonged to Karachi city, mixed gender both male and female. There was no age limit.

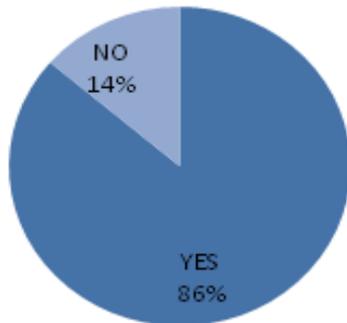
Data collection tool was quantitative and text based. Data was collected using structured questionnaire comprising of two parts: in first part demographic information of participants were collected while second part of questionnaire contained different questions to identify the various parameters on herb use on skin. Each participant was asked to fill the form alone. Questionnaire was designed to explore behavior of participants towards using herbal medicines in different skin conditions by asking

- Whether they use herbs based medicines to treat skin diseases or not.
- Effectiveness level of traditional medicines.
- Perception regarding toxicity and adverse reactions of herbal medicines.
- Knowledge about interaction of herbs with other medications.
- Simultaneous use of both conventional and traditional herbs.
- Providing information to health care professionals about concurrent use of herb with allopathic medicines.

## 3. RESULTS AND DISCUSSION

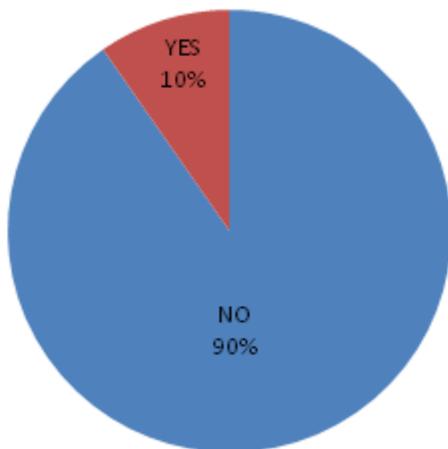
Results of this demographic survey revealed that skin diseases are very common in Karachi city and choice of herbal treatment is also very prevalent among local population to treat such skin conditions. However most of the general public considered this treatment option completely safe that should not be the case.

Data analysis of this demographic survey showed that herbal drugs are very popular (86%) among local residents of Karachi city that is shown in Fig-1.



**Fig-1: %age of participants using herbs to treat different skin disorders.**

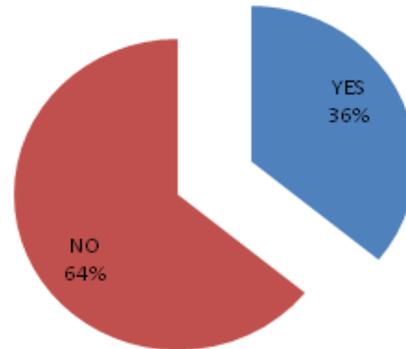
Second important parameter was to find the concept of safety and toxicity of herbal drugs upon misuse. Figure 2 represents that 90% participants have misperception that using these drugs of natural origin is completely safe and produce no side effects.



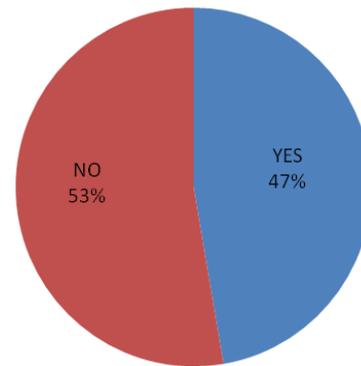
**Fig-2: Perception of participants regarding possible toxicity of herbs.**

Herb-drug interaction is the burning issue of current scenario. Figure 3, 4, and 5 demonstrate the percentage of participant that simultaneously use herbs and allopathic medicines, inform their practitioners about this practice, and the concept

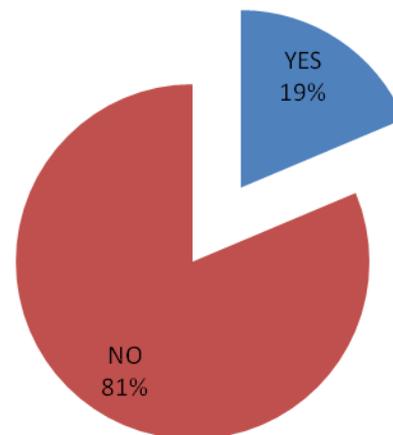
of herb-drug interactions respectively.



**Fig-3: Concurrent use of herbs with conventional medicines.**



**Fig-4: %age of participants sharing information of concurrent use of herbs with health care provider.**



**Fig-5: % age of participants having concept of herb drug interaction.**

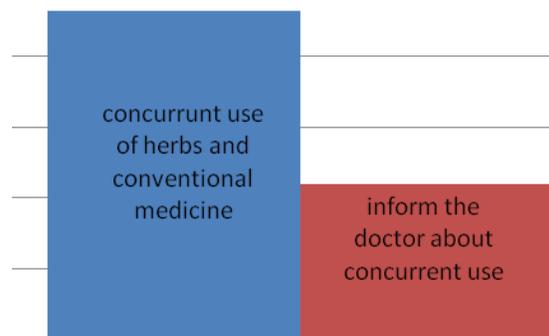
Prevalence of skin diseases is very common in Karachi city likewise other regions of Pakistan. According to the scientific data published in literature Eczema (atopic dermatitis, seborrhoeic dermatitis, contact dermatitis), Infections of bacterial, viral, and fungal origin, sexually transmitted infections, Acne, drug reactions, urticaria, Scabies, Pigmentation disorders are the most common skin disorders in different cities of Pakistan (Aman S *et al.*, 2017; Neamsuvan O *et al.*, 2015). These diseases are treated with different means including conventional and traditional medicines. Objective of this survey were performed to know the popularity of herbs and ready to use herbal formulations in treating skin diseases. 86% people use herbal drugs while 14% participants (Fig. 1) never use these medicines and consult only conventional healers. Herbs may be used as crude drug as home remedies, ready to use herbal formulations may be taken as self medication or getting prescribed herbs from traditional practitioners. Use of herbal drugs is also documented in other parts of the world to treat skin diseases.

Herbal drugs are very effective, but their safety issues are the burning issue of current scenario. Most of the people in this survey i.e. 90% consider them safe (Fig.2). But actually the idea is dangerously false as these contain phytochemical metabolites that may produce toxic effect upon incorrect use and in-appropriate dosing.

Another aspect of herbal toxicity is the problem of herb drug interaction. This predicament can be seen if patients are using conventional and traditional medicines simultaneously (Figure 4). Phytochemical present in herbs responsible for therapeutic actions may interact with the active constituents present in allopathic medicines and produce synergistic or antagonistic effects.

According to our survey 36% participants concurrently use herbs and allopathic medicines and only 19% have knowledge about herb and drug interactions, that's why they are at high risk of toxic manifestation.

The possible risk of herb drug interactions may be reduced and avoided if patients timely inform their health care practitioners about this simultaneous use of both systems of medicines. If properly informed then, simultaneous use of herb and drug will be avoided or doses will be adjusted especially in case of scientifically proven herb and drug interactions from safety point of view. But unfortunately findings of our survey showed that 53% concurrent users (Fig. 4) don't tell their practitioners about simultaneous use of herbs and drugs. Fig.6 gives a quick glimpse that among concurrent users very less percentage of participants do this practice of informing their physicians about taking herbs and allopathic drugs together.



**Fig.6: Comparison b/w contemporaneous herb and drug users to those informing their general practitioner.**

The most common herbs people generally use for skin were aloe Vera, neem, turmeric, different volatile oils, mullein, vitex, marshmallow, mucilage etc. Details description of different plants (scien-

fic names, locals, constituents, medicinal actions and therapeutic uses) are provided in Table 1.

**Table 1: Medicinal herbs used in different skin disorders**

Scientific name	English name	Family	Constituents	Medicinal actions and Uses <sup>17-21</sup>	Pictures
<b>Alium Cepa L.</b>	Onion	Liliaceae	Phenolic acids, thiosulfinates, and flavonoids.	anticancer, antidiabetic, antimicrobial, cardiovascular, antioxidant effects	
<b>Aloe barbadensis Mill</b>	Aloe vera	Asphodelaceae (Liliaceae)	vitamins, Anthraquinones, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids	Antiseptic, Moisturizing and anti-aging, Antiviral, antitumor, Anti-inflammatory, skin burns, Laxative effects	
<b>Azadirachta indica L.</b>	Neem or margosa tree	Meliaceae	isazadirachtin, limonoids, nimbolide, triterpenes, beta-sitosterol, quercetin, catechins, carotenes, and vitamin C	Treating dandruff, skin conditions such as acne, psoriasis, and athlete's foot, anti-diabetic, insecticide	
<b>Melaleuca Alternifolia Maiden &amp; Betche</b>	Tea tree oil	Myrtaceae	Terpinen-4-ol, $\gamma$ -terpinene, $\alpha$ -terpinene, p-cymene, terpinolene, $\alpha$ -terpineol, $\alpha$ -pinene	Antimicrobial, anti-inflammatory, antimicrobial, anti-inflammatory, skin conditions,	

<b><i>Vitex agnus-castus</i> L.</b>	vitex, chaste tree	Lamiaceae	Flavonoids, iridoid glycoside, p-hydroxybenzoic acid, alkaloids, essential oils, fatty oils, diterpenoids and steroids	Acne, skin rash, balance hormone so used for cystic acne, topically applied to prevent from parasite, insect bite, itching, Hot flushes	
<b><i>Thymus vulgaris</i> L.</b>	thyme, German thyme, garden thyme	Lamiaceae	Thyme oil hydrocarbon and phenolic compounds like borneol, carvacrol, cymol, linalool, thymol, tannin, apigenin, luteolin, saponins, and triterpenic acid.	Reduce acne causing bacteria on skin, numbing agent applied to itchy skin, heal sores, scar, and wounds, antiseptic, antifungal so prevent skin from infections. anthelmintic, astringent	
<b><i>Matricaria ecutita</i> L.</b>	Chamomile	Asteraceae	Sesquiterpenes, flavonoids, coumarins, and polyacetylenes	Anti acne, anti aging, wound, burns, effective in soothing skin and regenerated tissues, anti-inflammatory, bactericidal effect	
<b><i>Athaea Officinalis</i> L.</b>	Marshmallow	Malvaceae	Amino acids, asparagines, pectins, starch, mucilage, flavonoids, coumarins, phytosterols, and tannins	pain and swelling (inflammation) of the mucous membranes	

<b><i>Trigonella Foenum graecum L.</i></b>	Bird's Foot, Fenugreek	Fabaceae	carbohydrates, proteins, lipids, alkaloids, flavonoids, saponins, steroidal saponins, vitamins, minerals	Skin rash, wound, anti- inflammatory, antibacterial, antifungal,	
<b><i>Verbascum Thapsus L.</i></b>	Mullein	Scrophulariaceae	saponins, polysaccharides, mucilage, flavonoids, tannins, iridoid and lignin glycosides, and essential oils, rotenone	Analgesic, anti- inflammatory, antiseptic, astringent, emollient, applied to ulcers, tumors and piles.	
<b><i>Glycyrrhiza Glabra L.</i></b>	Liquorice	Fabaceae	saponins, glycyrrhizin, glycyrrhetic acid, isoliquiritin, flavonoids, polysaccharides, mineral salts, isoflavones, glabridin and glabrene.	Skin redness, anti aging, pigmentation antidemulcent , anticancer, anti- inflammatory, antimicrobial	
<b><i>Curcuma Longa L.</i></b>	Turmeric	Zingiberaceae	dietary minerals, essential oils, curcuminoids. such as curcumin, demethoxy curcumin, Essential oils (turmerone, germacrone, atlantone, and zingiberene)	Parasitic skin condition, eczema, anti- inflammatory, anti-bacterial, antioxidant, antiparasitic, anticancer, antioxidant,	

<b><i>Psoralea Corylifolia</i></b> <b>L.</b>	Purple Fleabane	Fabaceae	Flavonoids (isobavachalcone, bavachalcone, bavachinin, bavachin, corylin, corylifol, corylifolin coumarins (psoralidin, psoralen, isopsoralen and angelicin), meroterpenes	anti-helminthic, leukoderma, psoriasis, vitiligo, asthma, ulcers, kidney disorders, and as an anti- inflammatory	
<b><i>Emblica officinalis</i></b> <b>Gaertn.</b>	Indian Gooseberry, Myrobalan, Amla	Phyllanthaceae	vitamin C (ascorbic acid) polyphenols (ellagic acid, chebulinic acid, gallic acid, chebulagic acid, apeigenin, quercetin, corilagin, leutolin,	Antioxidant, immune modulatory, antipyretic, analgesic, cytoprotective, antiulser, immune modulatory, anti- inflammatory,	
<b><i>Zingiber officinale</i></b> <b>Roscoe</b>	Ginger	Zingiberaceae	Terpene compounds, phenolic compounds (gingerols, shogaols, and paradol), mucilages, proteins, vitamin B6, vitamin C, calcium magnesium, phosphorus, potassium, sulfur and linoleic acid.	Prevent lipid per oxidation of skin, anti oxidant, anti- aging, antimicrobial, anti inflammatory, improve skin appearance	

#### 4. CONCLUSION

A major percentage of local public of Karachi city use herb oriented drugs to treat skin ailments. Majority of them are unaware about herb toxicities, especially the concept of herb drug-drug and herb-herb interactions are lacking among general public. Due to this misperception majority of people use traditional and conventional medicines simultaneously without informing practitioners that may lead to potential health problems. Awareness should be spread not only among local population, but also to the health care providers towards the safety and efficacy issues of traditional medicines.

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