

Study on Herbal Actives for Skin Care

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Abstract – There are a few manufactured skincare items containing dynamic fixings including monoethanolamine, diethanolamine, sodium laureth sulfate, triethanolamine, and so on have antagonistic responses like hypersensitive contact dermatitis, aggravation contact dermatitis, newline phototoxic and photograph unfavorably susceptible responses Herbal beauty care products are the arrangements which address beautifying agents related with dynamic and bioactive fixings from plant beginning. The herbal fixings present, impact the organic capacity of skin and give supplements important to the sound skin. As a rule, plants give various nutrients, cell reinforcements, fundamental oils, colors, tannins, alkaloids, carbs, proteins, terpenoids and other bioactive atoms. Natural beautifiers are topically applied and favored more to engineered or substance makeup for their unfavorable responses. Newline the huge range of information on therapeutic plants referenced in ayurvedic writings is exceptionally useful in the improvement of the new makeup items for present and future cosmeceuticals industry (Kumar et al. 2013). In India, we have a tremendous biodiversity and diverse climatic conditions which give an assortment of plants that can be utilized in the definitions. Our conventional information about the utilization of plant abundance is depicted in Ayurveda, Siddha, Unani and Tibetan arrangement of medication.

Keywords – Herbal, Skin Care

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INTRODUCTION

Skin is the peripheral organ of the human body. Subsequently, individuals are exceptionally mindful of, and extremely delicate to, the presence of their skin. Skin likewise has tasteful importance. The longing to have wonderful and sound looking skin has been a centuries-old mission for people. Skin with more splendid appearance and smoother surface will in general be seen as being better and more alluring the main job of the skin is to shields the life form from the external climate and keep up the homeostasis among inside and outside the body. The presence of the skin and hair is the "main picture" that others have of us. Individual articulation changes with varieties in the state of our hair and skin consequently present day cosmetology has the assignment of collaborating with physiology in looking after its "great condition" The skin is a coetaneous layer, covers the body and is the biggest organ of the body by surface region and weight. Its region is about 1.7 square meters and it weighs 4.5-5 kg, about 10% of body weight of a normal individual. It is 0.5 – 4 mm thick, most slender on the eyelids, thickest on the heels; the normal thickness is 1 – 2 mm.

Structure

Human skin is chiefly partitioned into three layers: Epidermis, Dermis, and Hypodermis (Fig.1.1)

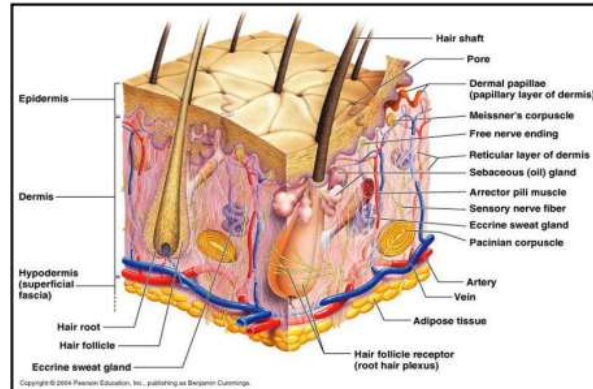


Fig. 1.1: Structure of the skin

Epidermis

The epidermis is the furthest layer of the skin. There are no veins and vessels in this layer. Its thickness is about 0.2 mm by and large and this thickness shifts relying upon the area on the body. The epidermis is additionally isolated into five sublayers. From the base (deepest), these sublayers are layer basale (basal cell layer), layer spinosum (prickle cell layer), layer granulosum (granular cell layer), layer lucidum (clear layer) and layer corneum (horny cell layer) (Fig.1.2) Stratum basale (basal cell layer): is the most profound sublayer of the epidermis and is made out of a solitary layer of basal cells. This structures the limit

to the dermis. Keratinocytes and melanocytes are created in this sublayer. With maturing, this layer gets more slender and loses the capacity to hold water.

Layer spinosum (prickle cell layer): This layer lies on top of the basal cell layer. Basal cells, through the interaction of turn-over, make their shape fairly compliment (multi-sided) and structure this layer. These phones are called prickle cells and have little spines outwardly of their film **Layer granulosum (granular cell layer):** is made out of 2 to 4 granular cell layers. In this sublayer, cornification called keratinization of keratinocytes starts.

Layer lucidum (clear layer): can be discovered distinctly in soles and palms. It is an exceptionally refractive sublayer. Its phones become compliment and all the more thickly stuffed during turn-over.

Layer corneum (horny cell layer): is the outside sublayer of the epidermis. This sublayer is made out of a few layers of hexagonal-formed level and hard cells named horny cells or corneocytes. Horny cells are encircled by intercellular lipids. A chief constituent is ceramide, which assumes a pivotal part in water maintenance. Horny cells additionally contain extraordinary substance intensifies called regular saturating factor (NMF) that likewise assumes a significant part in holding skin dampness. NMF is made out of sodium PCA, sphinolipids and ceramides, phospholipids, unsaturated fats, glycerol, squalane and cholesterol. Skin that needs NMF and ceramide will in general be extremely dry (Lees 2001).

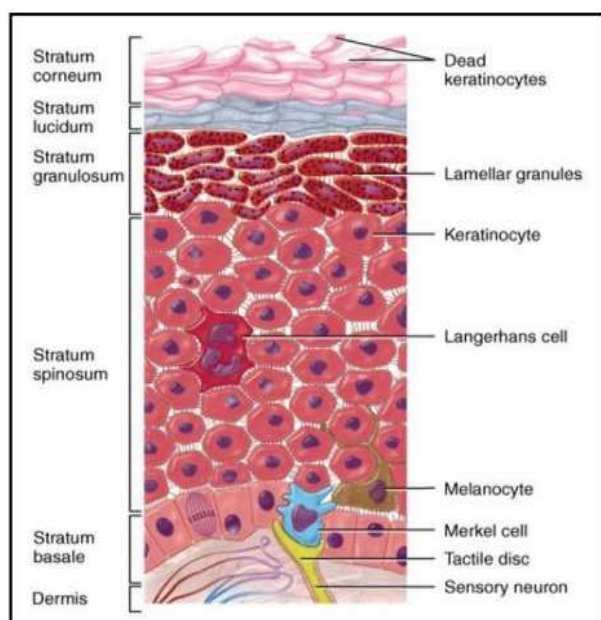


Fig. 1.2: Layers of epidermis

Dermis

The dermis is situated beneath the epidermis and is the tissue that upholds the skin and its additions (hair nails, and so forth) Its thickness fluctuates from one region to another, being most slender on the eyelids

and thickest on the back. It has two sublayers, the papillary layer which is the upper layer and comprises of associated tissues, nerve filaments, vessels and fibroblasts. The other layer is the reticular layer comprises the lower part of the dermis and addresses a consistent progress to the subcutis. In this sublayer, collagen strands are totaled into thick packages which are for the most part adjusted corresponding to the outside of skin. The dermis will in general turn out to be dynamically more slender with age. The dermal extracellular framework (ECM) has a dynamic and complex design made out of an interlocking lattice of sinewy proteins (collagen and flexible strands) and glycosaminoglycan rich proteoglycans. The fundamental constituent of the dermal ECM is collagen. Collagen strands make up 70% of the dermis, invigorating it and durability especially collagens I and III, which give skin rigidity. The collagen strands are the most bountiful filaments and are gathered together into dynamically orientated groups. Under the electron magnifying instrument these filaments show trademark cross over striations attributable to their impossible to miss structure. The standard capacity of the collagen strands is to help the inside construction of the skin (Fig. 1.3).

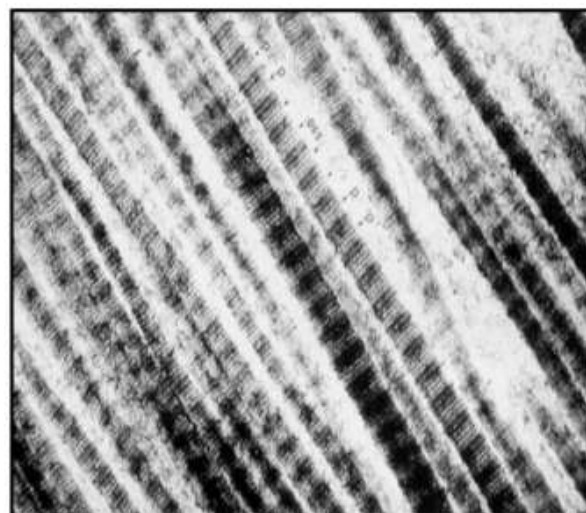


Fig 1.3: Collagen fibers in the dermis

Another important constituent of dermis is elastic fibres. The main component of elastic fibres is elastin. The principle function of this type of fibre is to provide the skin with the elasticity fundamental for all our movements (Fig. 1.4).

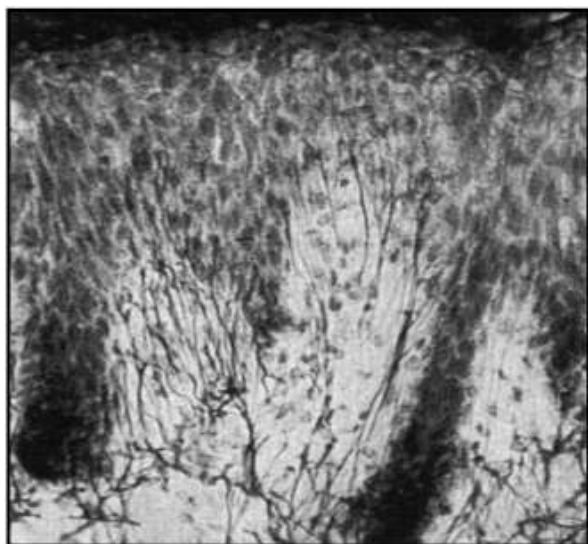


Fig 1.4: Elastic fibers in the dermis

Hypodermis

Hypodermis or Subcutis in histology is the third layer beneath the dermis. It is an elastic layer and includes a large amount of fat cells that work as a shock absorber for blood vessels and nerve endings. The thickness of this layer is reported to be 4 to 9 mm on average. However, the actual thickness differs from person to person and also depends on the body region.

Derivative structures of the skin

The subsidiary constructions of the skin incorporate hair, nails, sebaceous organs and sweat organs. Hair has various significant capacities like security, decrease of warmth misfortune and detecting light touch. Fingernails capacity to ensure the tip of the fingers and to help getting a handle on. Sebaceous organs are related with the hair follicles (pilosebaceous unit) particularly those of the scalp, face, chest and back; they are not found in smooth regions. At pubescence, sebaceous organs react to the expanded degree of androgen and mystery abundance of sebum prompts improvement of skin break out vulgaris in pre-adulthood. Sweat organs are of two kinds, eccrine organs and apocrine organs. Eccrine organs are tracked down everywhere on the skin particularly on the palms, soles, axillae and temple. Apocrine organs are bigger, the conduits of which void out into the hair follicles. They are available in the axillae and anogenital district.

REVIEW OF LITERATURE

In vitro assays for evaluation of anti-aging activity

Skin is a significant competitor and focus of oxidative pressure. The skin maturing is an inescapable cycle for every living life form. During this interaction, ROS age is expanded which prompts the corruption of ECM. Corruption of the ECM has straightforwardly

been connected to skin maturing and is co-related with an expansion in action of specific catalysts associated with skin maturing. These proteins are basically elastase and collagenase (Ndlovu et al. 2013). Effective utilization of cell reinforcements with explicit restraint action of proteins for security of ECM can be a valuable way to deal with forestall the skin harm from different sources. Moreover, plant sources have been assessed for creating regular cancer prevention agents that might be engaged with against maturing and hostile to wrinkle care (Oresajo et al. 2010). Recently, various examinations zeroed in on the assurance of hostile to maturing movement of plant separates through in vitro cancer prevention agent, against collagenase and against elastase action. Thring et al contemplated the counter collagenase, against elastase and hostile to oxidant exercises of concentrates from 21 plants and shown that enemy of collagenase exercises were displayed by sixteen plants, of which the most elevated action was found in white tea (~87%) (Thring et al. 2009). Chompoo et al exhibited the impact of *Alpinia zerumbet* parts on cancer prevention agent and skin illnesses related catalysts. Results show that the rhizome fluid concentrate displayed more prominent collagenase inhibitory action and end up being the wellspring of bioactive mixtures against compounds liable for causing skin sicknesses (Chompoo et al. 2012). In a new report, Wahab et al surveyed cell reinforcement limit, hostile to collagenase and against elastase action of Malaysian unfermented cocoa bean for corrective application (Wahab et al. 2014). Various examinations have been keen on communications among elastase and its inhibitors (Edwards and Bernstein 1994) (Bizot-Foulon et al. 1995) (Vasconcelos et al. 2011). Kim et al examined the inhibitory impacts of 150 restorative plants on elastase movement. In vitro screening of Jeju therapeutic plants were acted in the hunt of new cosmeceutical materials. In this investigation, removes got from 254 various types of Jeju restorative plants were evaluated for inhibitory impacts on tyrosinase and elastase, and with the expectation of complimentary revolutionary rummaging impacts. Results exhibited that 17 plant extricates had the option to repress elastase catalyst and accordingly can be important in the advancement of against maturing makeup (Kim et al. 2007).

In vitro assays for evaluation of anti-acne activity

Skin break out vulgaris is a sickness of pilosebaceous follicles. It for the most part starts in pubescence, when androgen levels increment fundamentally and invigorate abundance sebum emission (Scholl et al. 1984). It is a multifactorial illness. Particularly colonization of *P. acnes* in sebaceous organ is one of the causative components for skin inflammation vulgaris. Aside from *P. acnes*, *S. epidermidis* and *Staphylococcus aureus* (*S. aureus*) additionally assume significant

part in pathophysiology of skin break out. *P. acnes* has been portrayed as a provocative anaerobic living being that is embroiled in the improvement of fiery skin break out, while *S. epidermidis* and *S. aureus* are vigorous creatures that are normally associated with shallow contaminations of the sebaceous unit (Burkhart et al. 1999). Hassanzadeh et al showed that the most successive microbes disconnected from skin inflammation patients was *S. aureus* (Hassanzadeh et al. 2008). A few reports showed that, the auxiliary metabolite results of therapeutic plants have been adequately utilized as a wellspring of antimicrobial specialists against skin break out inciting microscopic organisms (Lertsatitthanakorn et al. 2006) (Park et al. 2004) (Saising and Voravuthikunchai 2012). Antimicrobial movement of plant removes and their blends can be controlled by different dispersion and weakening techniques. Agar well dispersion strategy is ordinarily utilized for fundamental screening of antimicrobial action followed by the assurance of Minimum inhibitory fixation (MIC) and Minimum bactericidal focus (MBC) of test removes utilizing stock weakening or agar weakening strategies (Klančnik et al. 2010). Chomnawang et al considered the antimicrobial impacts of Thai therapeutic plants against skin break out prompting microscopic organisms by circle dispersion and stock weakening strategies (Chomnawang et al. 2005).

Ali-Shtayeh et al researched the antimicrobial exercises of 56 Palestinian restorative plants against etiologic specialists of skin inflammation vulgaris, predominantly *P. acnes* and *S. aureus* utilizing plate dissemination and stock weakening strategies (Ali-shtayeh et al. 2013). Time kill viability study is a proportion of time dependant antibacterial movement. Normally stock weakening techniques are adjusted for assurance of time kill bends. Olajuyigbe and Afolayan examined the in vitro antibacterial and time-kill appraisal of rough methanolic stem bark concentrate of *Acacia mearnsii* De Wild against Gram positive and Gram negative microbes *P. acnes* lipase is a significant factor in the pathogenesis of skin inflammation since it breakdowns the sebaceous fatty substances in to free unsaturated fats which prompts extreme aggravation (Higaki 2003). Assuming plant separate can repress this lipase chemical, it will be valuable as against skin inflammation specialist. Batubara et al screened the antiacne intensity of Indonesian therapeutic plants by antibacterial, lipase restraint, and cell reinforcement examines (Batubara et al. 2009). Patil et al showed the counter lipase movement of Indian therapeutic plants by colorimetric microassay and plate test technique (Patil et al. 2012).

Anti-microbial activity

Different examinations were directed to demonstrate the antibacterial and against contagious exercises of *Ocimum tenuiflorum* Linn. Singh et al showed that fixed oil of *Ocimum* leaves showed great antibacterial movement against *S. aureus*, *Bacillus pumilus* and *Pseudomonas aeruginosa*, where *S. aureus* was the

most helpless creature. This investigation recommended that the higher substance of linolenic corrosive fixed oil could contribute towards its antibacterial movement (Singh et al. 2005).

Ali and Dixit segregated two flavonoid compounds for example Orientin, Vicenin from fluid concentrate of new leaves and showed their antibacterial action against microorganisms causing urinary parcel contamination in human which incorporate *Escherichia coli*, *S. aureus*, *Staphylococcus cohnii* and *Klebsiella pneumonia* (Ali and Dixit 2012). Viyoch et al screened the fundamental oils of different types of *Ocimum* for antimicrobial action against *P. acnes*. Results show that, these fundamental oils could be fuse in appropriate details for skin inflammation healthy skin (Viyoch et al. 2006). Prasannabalaji et al assessed the in vitro antibacterial movement of different dissolvable concentrates of Indian customary therapeutic plants including *Ocimum* species. Antibacterial action was performed against *Escherichia coli*, *S. aureus*, *Salmonella typhi*, *Salmonella paratyphi* and *Klebsiella pneumonia* and it was reasoned that methanol concentrates of *Ocimum* species showed greatest zone of hindrance against *Salmonella typhi* (Prasannabalaji et al. 2012). Eugenol and Methyl eugenol were distinguished as the significant constituents of fundamental oil of *Ocimum tenuiflorum* Linn. Joshi considered the antibacterial action of fundamental oils of *Ocimum*, eugenol and methyl eugenol. Quantities of Gram positive, Gram negative and parasitic strains were utilized as test living beings in the examination. Methyl eugenol displayed huge movement against *Pseudomonas aeruginosa* while eugenol was powerful just against *S. aureus* (Joshi 2013).

OBJECTIVES

Evaluation of selected plant extracts for anti-aging activity using antioxidant and anti-enzyme assays.

Evaluation of selected plant extracts for anti-acne activity using antimicrobial and anti-enzyme assays.

RESEARCH METHODOLOGY

a) List of Reagents and Chemicals used in the experiments

Sr. No.	Name	Make
01.	Choral Hydrate	Qualigens
02.	Phloroglucinol	Qualigens
03.	Hydrochloric acid	Qualigens
04.	Methanol	Merck
05.	Ethanol	Merck
06.	α -naphthol	Qualigens
07.	Barfoed's reagent	Qualigens
08.	Sulphuric acid	Qualigens
09.	Copper Sulphate	Qualigens
10.	Ninhydrin	Qualigens
11.	Chloroform	Qualigens
12.	Acetic anhydride	Sigma-Aldrich

13.	Dragendorff's reagent	Qualigens
14.	Mayer's reagent	Qualigens
15.	Wagner's reagent	Qualigens
16.	Ferric chloride	Qualigens
17.	Lead acetate	Qualigens
18.	Potassium dichromate	Sigma-Aldrich
19.	Gallic acid	Sigma-Aldrich
20.	Folin-Ciocalteu reagent	SRL Pvt Ltd
21.	Sodium carbonate	Qualigens
22.	Quercetin	Sigma-Aldrich
23.	Alluminium trichloride	Qualigens
24.	Sodium nitrite	Qualigens
25.	Sodium hydroxide	Qualigens
26.	2,2-diphenyl-1 picrylhydrazyl (DPPH)	Sigma-Aldrich
27.	Ascorbic acid	SRL Pvt Ltd
28.	Sodium chloride	Qualigens
29.	Muller Hinton Agar	Hi-media

Phytochemical analysis

A. Qualitative physiochemical analysis.

The test extracts were tested for various chemical constituents by following different chemical tests (Kokate et al 2006).

(i) Tests for carbohydrates

- Molisch's test: -To the test solution few drops of alcoholic α -naphthol was added, then few drops of Conc. H_2SO_4 was added through sides of test tube, purple to violet colour ring appears at the junction.
- Barfoed's test: -1ml of test solution was heated with 1ml of Barfoed's reagent on water bath, if red cupric oxide is formed, monosaccharide is present. Disaccharides on prolong heating (about 10 min.) may also cause reduction, owing to partial hydrolysis to monosaccharide's.
- Fehling's test:- 1 ml Fehling's A and 1 ml of Fehling's B solutions were boiled for 1 minute and equal volume of test solution was added and boiled for 5-10 minutes and first yellow, then brick red precipitate was observed.

RESULTS AND DISCUSSION

Pharmacognostic analysis

A. Macroscopic evaluation of plants

Macroscopic evaluations of all plants were performed and morphological characteristics are summarized in Table 1.1.

Table 1.1: Macroscopic/ organoleptic characteristics of plants

PLANT	COLOR	ODOR	TASTE	SHAPE
<i>Ocimum tenuiflorum</i> Linn (Leaves)	Green to dark green	Strong and aromatic	Characteristic and aromatic	Elliptic oblong, entire or serrate
<i>Citrus reticulata</i> Blanco (Peel)	Green to orange	Strong and aromatic	Sour, bitter	Peels irregular in shape. Dots are oil glands
<i>Citrus aurantifolia</i> Swingle (Peel)	Green to yellow	Strong and aromatic	Sour, bitter	Peels irregular in shape. Dots are oil glands
<i>Butea monosperma</i> Lam (Seeds)	Reddish brown	No characteristic odor	No characteristic Taste	Flat and uniform
<i>Vitis vinifera</i> Linn (Seeds)	Dark brown	Strong and aromatic	Pungent, bitter	Ovoid shape

CONCLUSION

Pharmacognostic and physiochemical examination is the underlying and critical advance for home grown medication improvement. Naturally visible and tiny assessment of those plants and their powders affirmed the immaculateness of rough medication and no presence of debasement. Physicochemical boundaries were tried according to WHO rules and discovered to be available inside limits. Subjective phytochemical investigation of plant separates uncovered the presence of phenols, flavonoids and tannins, which have been accounted for to have cell reinforcement action, and forestall or control oxidative pressure related problems. The most noteworthy phenolic and flavonoid content were available in OT HAE and CR HAE extricates.

Plants were evaluated for against maturing and hostile to skin break out properties and from the acquired outcomes, we have chosen OT HAE and OT CAE concentrates of *Ocimum tenuiflorum* Linn and CR HAE and CR CAE concentrates of *Citrus reticulata* Blanco for additional investigation as they showed solid cell reinforcement and antimicrobial potential and can be assessed for healthy skin properties.

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