

EXPLORING THE UTILIZATION OF HALAL INGREDIENTS DERIVED FROM BOTH ANIMALS AND PLANTS IN COSMETIC PRODUCTS: A COMPREHENSIVE ANALYSIS OF THEIR SOURCING, PROCESSING, AND COMPLIANCE WITH HALAL STANDARDS

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Abstract

The global use of cosmetics has skyrocketed in recent times, driven by the desire to enhance one's appearance and fit into societal norms. Historically, people, especially women, have turned to natural ingredients from plants and animals for beauty purposes. This reliance on traditional cosmetics persists, particularly in rural areas. Efforts are ongoing to find effective, safe, and natural beauty ingredients from botanical and animal sources. Botanicals, such as wheat germ oil and palm oil, are rich in antioxidants and offer various skincare, haircare, and dental care benefits. Animal-derived compounds also contribute to cosmetic formulations, providing activities like anti-inflammatory, antioxidant, and anti-aging effects, among others. Ingredients like marine collagen, astaxanthin, caviar, and pearls, sourced from sea creatures, offer cosmetic benefits and are rich in phytochemical components. However, their use has decreased due to hygiene, ethical, and ecological concerns, as well as the potential for irritative or allergic reactions. In today's beauty industry, there's a growing emphasis on finding ingredients that are effective, safe, and environmentally friendly, reflecting a shift towards more sustainable and ethical practices.

Keywords: Health issues; Cosmetics; Herbal; Zooceuticals; Cosmetic ingredients; Beauty

INTRODUCTION

A cosmetic product is defined as "any substance prepared for the use on external surface of the human body, including the hair, epidermis, lips, nails, teeth and external genital organs for the purposes of protecting, cleaning, maintaining, changing their shape, perfuming them in well condition and combating body odor. Novel 'bioactive' ingredients have obtained from different sources such as soil, the sea, and plant and animals kingdom. The most important ingredients derived from different sources are vitamins, Chinese herbs, minerals, enzymes, antioxidants and hormones. We might not be entirely aware of how much help we receive from plants during the day. In addition to producing food and building materials, plants also produce high-value active chemicals used in pharmaceuticals and cosmetics (Caesar et al., 2017; Franc, a et al., 2017). The cosmetics enterprise developed hastily quickly after the advent of Pakistan. In the Indo-Pak Sub-continent, use of dies beauty substances like ritha, henna, sekakai, mutlani clay, mash ki Dal, Beri ke patte, hair-oils, arq-e-gulab, gewari, sandalwood, almond oil, ubtan, kajal surma and several others products have been used by female in the globe.

Plant based cosmetics

However, there is mounting scientific data that suggests plants have a rich and complex arsenal of photochemical active compounds that can actively rebuild, cure, and protect skin in addition to soothing and smoothing it. Plants are frequently utilized in the creation of novel medicinal and cosmetic goods. Herbal cosmetics are goods that contain herbs in extract or crude form. Every human has the desire to appear lovely. They have been using various kinds of materials since the dawn of time for this purpose. Early on, religious rites and cosmetics were connected. For virtually all ancient civilizations, it is true (Sua´rez et al., 2012; Leopold, 2014; Mandrone et al., 2017).

In many countries, ubtan with flour, turmeric, and vegetable oil is still done before marriage. Women are still applying kum kum. All cosmetics products were created at home in the early days as shown in figure 2. Natural ingredients such fragrant substances, spices, herbs, resins, colors, fats, and oils

were also employed by the locals of many countries to make fragrances. Types of Phytomolecules provided by plants and functions in cosmetic products is shown in figure 1.

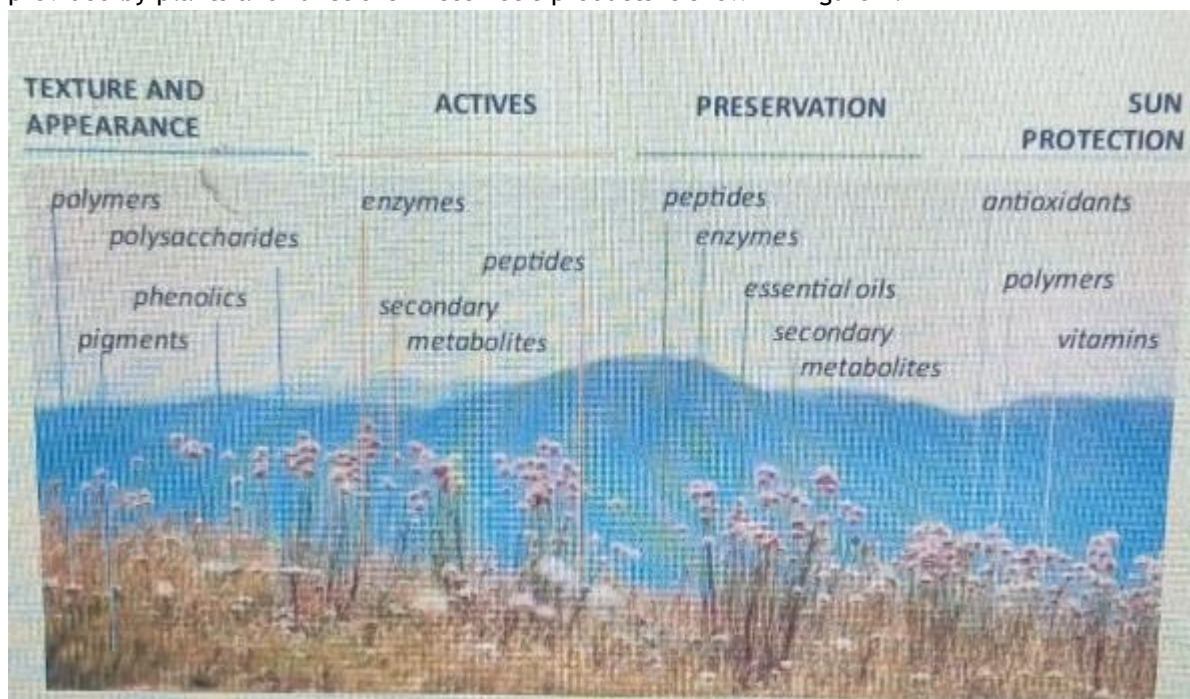


Figure 1. Types of Phytomolecules provided by plants and functions in cosmetic products.

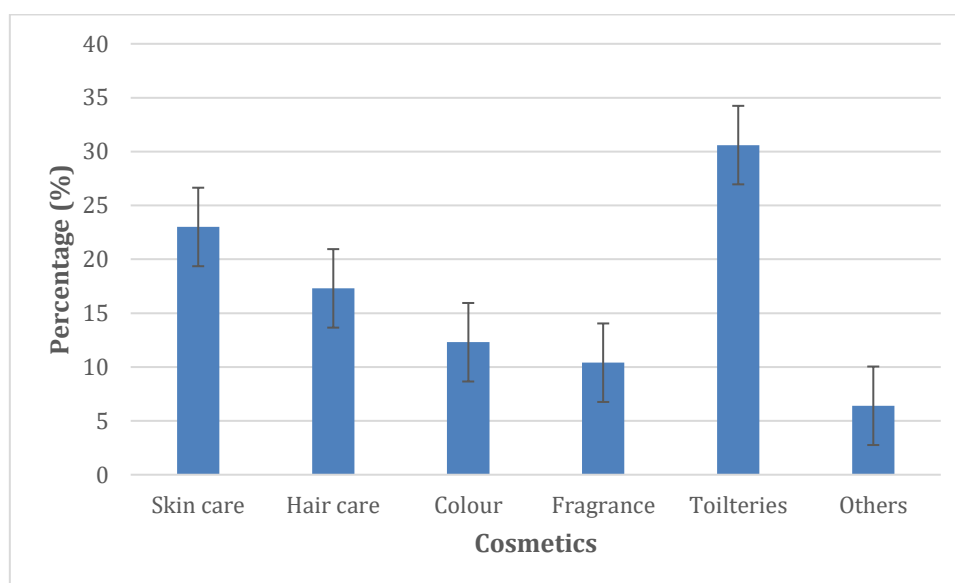


Figure 2. Classification of cosmetics with their percentage.

Skin care

Skin acts as a magnificent barrier against the outside world, regulating body temperature and fluid balance, blocking pathogens and toxins, and providing some sun protection. With layers of epidermis, dermis, and subcutaneous tissue, skin is a living organ. Since ancient times, natural medicines have been utilized to treat a wide range of dermatological problems, including inflammation, phototoxicity, psoriasis, atopic dermatitis, and alopecia areata. A cosmetic formulation with only naturally derived active ingredients is intended to protect the skin from external and internal injury and to restore the equilibrium of the lipids in the dermis that have been disrupted by dermatosis and aging (Pawar et al., 2017).

Mucilage, which is made up of polysaccharides, complex sugars, and starch derivatives and is frequently found in emollient natural medicines, provides a soothing membrane across the skin's surface and relieves dryness. Protection of the pores and skin hydration, and producing softening consequences to pores and skin and hair preparations is executed the use of seed oils wealthy in fatty acids and triglycerides that minimize transepidermal water loss. Those flowers with antiinflammatory homes frequently have excessive stage of flavonoids; these that are used to company and tone the pores and skin are prosperous in tannins which have an astringent effect; and for pores and skin recuperation in the case of infections the use of vegetation with a range of antimicrobial and antifungal biocides is really useful (Gediya et al., 2011).

Skin protection and treatment

Sunflower oil

This non-volatile oil obtained from *Helianthus annuus*. It consists of several important compounds such as waxes, lecithin, carotenoids and tocopherols. Such compounds obtained from sunflower seeds used in cosmetics as noncomedogenic (Faccio, 2020).

Onion

Different parts of onion (*Allium cepa*) used traditionally for different purposes such as a poultice for acne, abscesses, blackheads and boils to remove the infection and reduce inflammation. The healing process of wound speed up by the use of onion due to having anti-inflammatory, antimicrobial, antiallergic and antifungal effects in the presence of flavonoids (Juliano and Magrini, 2018a).

Mango

The edible portion of mango (*Mangifera indica*) is the main source of stearic acids, triglycerides, oleic used in cosmetics. Leaves of the mango show antibiotic characters which used as painkiller or relieve the pain of scorpion stings and apply on the wound for healing (Faccio, 2020).

Pea

Pea (*Pisum sativum*) consists of proteins, fats, lecithins, salts, carbohydrates and antidermatosis used in the treatment of acne. Faccio (2020) reported that face masks made from crushed peas used on wrinkled skins.

Coconut oil

The oil obtained from coconut (*Cocos nucifera*) not only used in cooking or baking but also act as an excellent skin softener and moisturizer. Many researchers had reported that extra virgin coconut oil obtained from the seed or fruit of the coconut palm tree is effective and safe when used as a moisturizer, helped prevent protein loss from the wet combing of hair.

Olive oil

Olive oil has anti-inflammatory properties due to the presence of polyphenols compounds. It is used for the treatment of various skin disorders such as xerosis, eczema, atopic dermatitis, rosacea, psoriasis, seborrhoea, thermal and radiation burns. Olive oil has antioxidant effects when topically applied it can effectively reduce UVB-induced skin tumours (Faccio, 2020).

Aloe

It is very important medicinal plant and its yellow flowers and leaves can be consumed as food. The extracts of leaves and flowers of *Aloe vera* used in various cosmetics because its extract act as good moisture, and keep the skin soft.

Cocoa butter

Cocoa butter obtained from *Theobroma cacao* is peaceful after sunburn. It contains several antioxidants, oleic, palmitic acids and stearic is used medicinally and in preparation of many cosmetic (Faccio, 2020).

Pumpkin

Seed of pumpkin (*Cucurbita pepo*) consists of fatty acids, has antiinflammatory properties and oleic, linoleic, stearic acid and palmitic compounds (Abuelgassim and Al-Showayman, 2012). The oil of pumpkin applied on herpes lesions, acne vulgaris, syphilitic sores, stubborn leg ulcers, pimples and venereal sores for healing (Dar et al., 2017).

Eczema/atopic dermatitis and Turmeric

Eczema is a skin disease which cause swelling, redness, itching and scaling. The rhizome portion of turmeric used medicinally after cleaned, boiled, dried, and grinded in form of yellow powder. It consists of some compounds like curcumin, used in the biological activities as antiparasitic, antibacterial, and anti-HIV. The septic and aseptic wound can heal speedily after the applications of powder. The powder has some anticarcinogenic, antioxidants and antiinflammatory, which speed the process of wound healing. The ingredients used for the treatment of acne, eczema, prevent from injury and sun damage to the skin (Gopinath H, Karthikeyan, 2018). The composition of turmeric is given in table 1.

Table 1. The components and composition of turmeric rhizome.

Components	Composition
Turmeric	Fibre, fats, carbohydrates, proteins, minerals, curcuminoids
Curcuminoids	Curcumin, demethoxycurcumin, cyclocurcumin, bis-demethoxycurcumin
Essential oils	Alcohol, cineole, ketones d-sabinene, zingiberene, α -phellandrene, borneol

Gopinath et al (2018).

Artemisia, spots, Acne and pimples

Artemisia absinthum, *A. vulgaris* and *A. campestris* have antioxidant properties used customarily for skin diseases especially cancer in many countries. Many other skin issues such as acene, pimples and spots can be treated or removed by the compounds of plant ingredients.

Oats

People have been ingesting oat (*Avena sativa*) and oat merchandise due to the fact the first century, however the therapeutic makes use of oats are in moderation documented. Today, for a precise application, beauty chemists attain higher advantages with the aid of the usage of oat fractions than via the use of complete oatmeal. These substances are secure and non-irritating, and have terrific beauty stability. Derived from herbal renewable resources, they defend and restore the pores and skin and hair from negative environmental results such as UVA/UVB irradiation, pollution, smoke, microorganism and free radicals and decrease discomfort, inflammation and infection of the skin. They additionally assist to restore harm from different chemical compounds such as AHA (alpha-hydroxy acids), surfactants and bleaches.

Oatmeal, bran, oat oil, Hydrolysed oat protein, oat flower and Oat β -glucan are the main oat products or ingredients which widely used in cosmetics products (lotions, shampoos, moisturizing baby bath). These protect the skin from UV damage, activate collagen synthesis, stimulate metabolic activity, improve the tensile strength of hair, develop skin viscosity, as anti-irritating, remove inflammation or swelling of skin, reduce discomfort (Bedoux et al., 2014), repair the hair and skin from harsh environmental factors such as pollution, UVA/UVB irradiation, smoke, and several microbes like viruses and bacteria.

Anti-Aging Treatment

The essential environmental element that reasons human pores and skin growing older is UV irradiation coming from the sun. Changes due to getting older in the skin, in which degenerative modifications exceed regenerative changes, are characterized by means of thinning and wrinkling of the dermis collectively with the look of lines, creases, crevices and furrows, particularly accentuated in traces of facial expression.

Carrot and ginkgo

Carrot (*Daucus carota*) is rich natural source of various vitamins especially vitamin A. The oil obtained from carrot seed used for anti-aging. The new cells of body developed by the use of carrot oil and acts as natural toner for the skin. Ginkgo (*Ginkgo biloba*) act as a circulatory tonic which gives strength to the capillaries. The flexibility of capillaries increases with the applications of *G. biloba* which results more oxygen transferred to the body parts especially eyes and brain. Not only protect the eyes and brain but also protects the nervous system.

Ginseng

Ginseng (*Panax ginseng*) is a drug used to activate the skin metabolism, decrease keratinization, soften the skin, increase the beauty of skin, and provide moisture (Mishra et al., 2011). It act as antiaging by enhancing skin nutrition, blood circulation and skin metabolism.

Hair protection

Plant substances can be used as hair increase stimulation, hair colorants and dyes, and in a variety of hair and scalp complaints such as dandruff. Vegetable dyes can commonly be encouraged to sufferers sensitized to oxidative dyes, due to their low allergenic electricity. The use of herbal dyes on the hair has no longer made fantastic development and this is due firstly, to the reality that herbal dyes are no longer very secure in solution, and are susceptible to oxidation, discolouration, pH color shift and fading. Secondly, a single herbal dye can also now not supply the proper colour, and solely henna or walnut appear to be appropriate to color the hair. However, many colors can be acquired by using mixing with the leaves of different flora as given in table 3.

Dandruff Treatment and hair colouring

There are different plants or herbs which reported by researchers in the globe, used for the treatment of dandruff. The most important herbs or plants used for dandruff treatment are Neem, henna, Kapoor, amalaki, hirda, sweet flag, behada, magic nut, mandor, rosary pea, cashmere tree and bringaraj. Some are given below.

Neem (*Azadirachta indica*) and Henna (*Lawsonia inermis*)

A. indica is considered an important herb which has blood purifier properties and enhance the beauty because it used to treat the skin diseases due to toxic effects. Another herb, henna derived from *L. inermis* plant having a dye molecule (Lawson). The leaves of this herb grinded to made powder which gives colour or stains to hair due to natural affinity with the proteins in hair. It acts as beauty enhancer. The coppery shade on skin can obtained if the hair is dyed with henna and then handled with a warm decoction of *Allium cepa*.

Sage, thyme, garlic and rosemary

These are very important products used in cosmetics like soap, and shampoo favorable for the removal of dandruff, reduce hair loss and greasy skin. These gives body and sheen to hair and control dandruff. Thyme can promote natural hair health, while garlic lotion not only help to control dandruff but also act as tonic, antiseptic and antioxidant. These products show antifungal and antibacterial properties which reduce the allergic infection on skins and head (Francisco José González-Minero and Bravo-Díaz, 2018).

Apigenin, Curcumin and Karkadeh or red sorrel

Hair and skin colour can obtained by the use of different herbs. Apigenin gives dull golden yellow colour due to presence of a flavonoid. Yellow hair colour is obtained with the use of curcumin, while red colour is obtained through the use of karkadeh (*Hibiscus sabdariffa*) (Lee et al., 2020).

Marketed products of Herbal Cosmetics

Several cosmetic products marketed in the global market given in the table 2.

Table 2. Cosmetics products marketed in the globe.

Cosmetics products			
skin care	Hair care	Lip care	Eye care
Face pack, face scrub	Shampoo, anti-dandruff shampoo	Lip balm	Foundations, mascaras
Gel, cold cream	Hair oil	Lip plumper	Eye shadow, pencils
Face powder, cream	Hair gel, hair conditioner	Lip gloss	Deodorants, perfumes
Face wash, massage gel	Hair colour	Lipstick	Soap, eye liners

Kumar et al. (2016).

Table 3. Plants parts, compounds and cosmetic use.

Plant	Plant parts	Compound	Cosmetic use	References
Leaf	Taraxacum officinale, Fragaria vesca	Chologenic acid, Ellagitannin	Antioxidant, skin whitening	Xie et al. (2018)
Bark	<i>Prunus padus</i> , Betula	Polyphenol and flavonoid, Betulin	Skin softener, beauty, Anti-microbial	Hwang et al. (2014)

Root	<i>Morus nigra</i>	Phenolics 2,4,20 ,40 - tetrahydroxychalcone, morachalcone	A Skin whitening	Khongkarat et al. (2020)
Flower	<i>Dendrobium</i> <i>Pelargonidin</i> , <i>Clitoria ternatea</i>	sinapic, ferulic acids, Phenolics	Skin softener, beauty, Antioxidant	Kanlayavattanakul et al. (2018)
Stem	<i>Chromolaena odorata</i> , <i>Opuntia ficus-indica</i>	a- and b-Pinenes, ND	Aromatic, Soothing	Owolabi et al. (2010)
Fruit	<i>Carica papaya</i> , <i>Rosa canina</i>	Papain, Beta carotene, lycopene, lutein	Scar treatment, Anti-inflammatory	Manosroi et al. (2013)
Petal	<i>Rosa gallica</i>	Anthocyanins, flavonoids, polyphenols	Anti-inflammatory	Lee et al. (2014)
Seed	<i>Aesculus hippocastanum</i>	Kaempferol, flavonoids quercetin	cell caring, decrease capillary delicacy,	Lee et al. (2018); Xi et al. (2018)
Volatiles	<i>Eugenia uniflora</i> , <i>varia</i>	Methyl jasmonate, Terpenoids	Scent, hypothermic	Yazaki et al. (2017); Scognamiglio et al. (2012)
Nuts	<i>Corylus avellana</i> , <i>Sapindus mukorossi</i>	Saponins, Phenols	Detergent, Antioxidant	Almutairi and Ali, (2014); Go´ ral and Wojciechowski (2020)
Pollen	<i>Helianthus annuus</i> , <i>Echium plantagineum</i>	Safflospermidines, Anthocyanin petunidin-3-Orutinoside	Skin whitening, Varia	Xi et al. (2018)

Commonly used cosmetics items

There are different cosmetics items which commonly used in the globe given in table 4.

Table 4. Commonly used cosmetic items.

Cosmetics	Ingredients	Uses/applications	References
Nail polish	Nitrocellulose, formaldehyde, plasticizers, manganese, benzophenone, iron oxides	Ticking and coloring agent	Ouremi and Ayodele (2014); Felzenszwalb et al. (2019)
Hair care, shaving products, moisturizers	Salicylate, parabens, coloring agents	Reduce growth of bacteria	Bukhari et al. (2013)
Lipsticks	Lead, aluminum, formaldehyde, cadmium, titanium dioxide, manganese	Volatile yellow and white colors	Zakaria and Ho YB (2015); Malvandi and Sancholi (2018)
Baby wipes, facial and eye makeup and detergents	Methylisothiazolinone, tretinoin, mercury, copper	Cleanser, slow down or kill bacteria	Jacob et al. (2018); Khan et al. (2021)
Aging and skin-care products	Beta-hydroxy-acids, salicylic acid, phthalates	Improve texture of skin, stop UV radiations	Jacob et al. (2018); Khan et al. (2021)
Kohl (surma)	Lead sulfide	Darkening of eyelids	Ullah et al. (2017)

Shampoo, toothpaste and body soap	Sodium sulfate, fluoride, laureth sulfate, triclosan, triethanolamine	Cleansing agent	Bondi et al. (2020)
Face makeup	polyethylene glycol, diethanolamine	pH adjuster	Chohan et al. (2016)

Plants used as cosmetics in Pakistan

The use of different plants as cosmetics is increasing day by day in the world especially Pakistan. The plant based medicine/cosmetics is known as Unani System of Medicine. Such types of herbs improve the beauty of human beings. Different types of plants used as cosmetics by women in Pakistan. Their details with local and scientific names is given in table 5. The women living in rural and urban areas of Pakistan use these herbal cosmetics for enhancing their beauty. Women believe that such herbs are freely available, less expensive, and have no bad effects on health.

Table 5. Traditionally used plants as cosmetics by local female in Pakistan

Serial number	Local name of plant	Scientific name
1	Aloe vera	<i>Ghewar gandle</i>
2	Sarsoon	<i>Brassica campestris</i>
3	Bhang	<i>Canabius sativa</i>
4	Ajwine	<i>Carum copticum</i>
5	Chawho	<i>Artemisia scoparia</i>
6	Shaljum	<i>Brassica rapa</i>
7	Datura	<i>Datura innoxia</i>
8	Laeli	<i>Convolvulus arvensis</i>
9	Saroo	<i>Cupressus sempervirens</i>
10	Lemon	<i>Citrus lemon</i>
11	Kherra	<i>Cucumis sativa</i>
12	Channa	<i>Cicer arietinum</i>
13	Neem	<i>Azadirachta indica</i>
14	Moong phali	<i>Arachis hypogea</i>
15	Lasooray	<i>Cordia obliqua</i>
16	Polee	<i>Carthamus oxycantha</i>
17	Papeeta	<i>Papaya carica</i>
18	Saeb	<i>Pyrus malus</i>
19	Kach mach	<i>Solanum nigrum</i>
20	Podena	<i>Mentha lonifolia</i>

Ahmad et al. (2008).

Animals based cosmetics

Zooceuticals are cosmetics that incorporate substances that are animal- or, more broadly, zoological-derived. Because they contain substances with a natural origin, the terms biocosmetics, cosmeceuticals, and natural cosmetics are more frequently used than this one. The term "zooceuticals" refers to all cosmetics intended for human use. They are not interchangeable with "cosmetics for animals," which are entirely different products that can only be used by veterinarians or for grooming pets' skin or hair. Consider the example of snail slime. Animal derivatives used as cosmetic compounds are frequently replaced by substances derived from plants, through chemical synthesis, or through biotechnological uses, such as hyaluronic acid, which is manufactured in a lab from bacterial cultures. However, in other instances, they are by-products of the animal business, such as crests, horns, hooves, and skin, and as a result, they come from the sacrifice of animals. Particularly, the ethical concerns surrounding the use of substances derived from animals in cosmetics concern both respect for animals (since they suffer in a manner similar to humans) and the protection

of biodiversity in order to prevent the extinction of animal species. This also entails protecting the entire environment. Animals are classified into different groups as shown in figure 3.

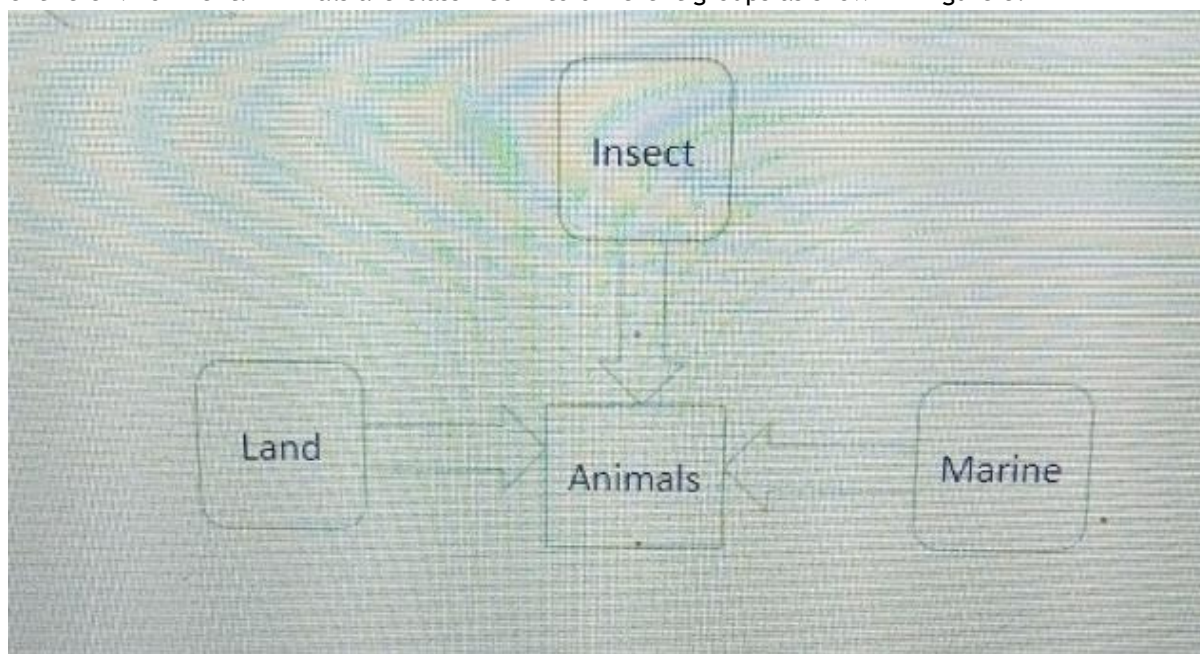


Figure 3. Classification of animals into groups.

Ingredients obtained from insects

Insects grant permission provide an environmentally companionable habit of producing finest biography-based matters that maybe implemented for beautifying requests. Insects can be developed on organic waste, in extreme numbers, and on narrow surfaces, therefore, making large industrialized breeding attainable. Different ingredients have been derived from several insects such as honey bee, beetle, spider, snails and silkworm. These derived ingredients used in different cosmetics without suffering any animals. Some ingredients and their uses is given in table 6.

Table 6. Cosmetic ingredients derived from insects.

Animal Source	Ingredient	Role	Category
Beetle	Beetle larva	Skin conditioning, Humectant	-----
Silkworm	Sericin, silk	Smoothing, hair/skin conditioning, antistatic	-----
Bee	Nectar, beeswax, honey, propolis, bee venom, royal jelly, bee larva, pollen	Skin conditioning, emollient, astringent, flavoring, perfuming	Honey and pollen cosmetics
Spider	Peptides	Skin/hair conditioning	Snail cosmetics
Cochineal	Carmine and lacquer cochineal	Hair fixing, film forming, viscosity controlling	-----

Alamgir (2018).

The cosmetics which obtained from spiders mostly used for skin and hair conditioning, while derived from cochineal used for film forming, hair fixing and viscosity controlling. The name of the cosmetics obtained from bees is honey and pollen cosmetics as given in table 6. Carmine and lacquer cochineal is extracted from cochineal and used as a pigment in various cosmetics products such as nail polish, lipsticks, blush, foundation, eyeshadow, and concealer.

Nectar, beeswax, honey, propolis, bee venom, royal jelly, bee larva, and pollen are obtained from bee and used as emollient and moisturizer. It is rich source of various enzymes, lipids and flavonoids which enhance the beauty of skin by mixing in night creams. The hair flexibility and strength can increased by the use of honey in shampoos. The beeswax and propolis used in cosmetic as antibacterial and various products prepared by mixing these substances like lavender essential oil

and lemon essential oil. These stimulates cell metabolism, fast the healing process, used as anti-aging cosmetic products.

The bee pollen consists of biologically active substances such as lipid, bioelements, proteins, fats, carbohydrates, vitamins, and phenolic compounds which used in various cosmetics for skin whitening and enhancing the beauty as shown in figure 4.

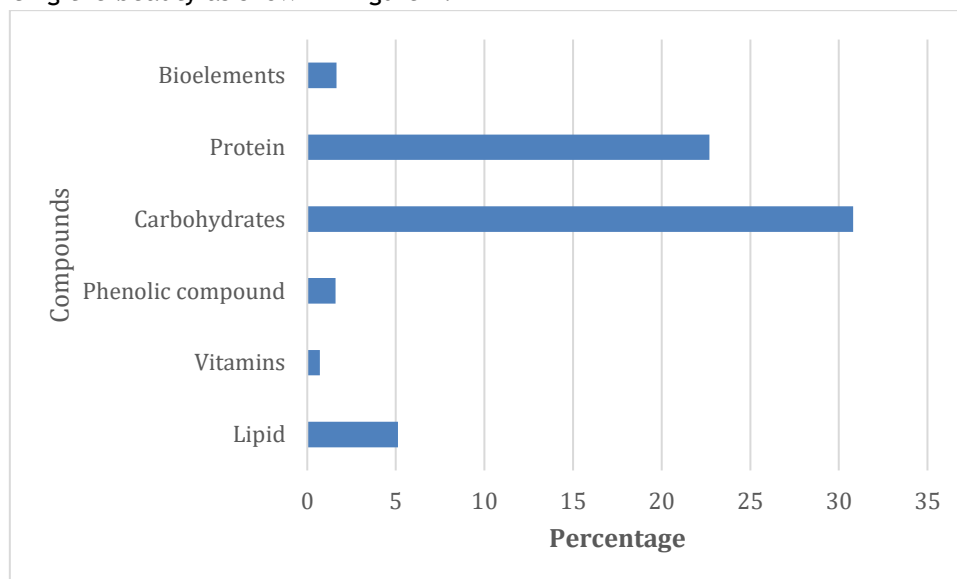


Figure 4. Percentage (%) of compounds found in bee pollen.

Bee pollen contains a variety of carbohydrates that are mostly utilized as thickeners, stabilizers, emulsion protective colloids, gelling, chelating agents and moisturizing. These include alginates, carrageenans, ulvans, fucoidans, laminarins, and agar. They have anti-aging, anti-viral, anti-cellulite, and anti-oxidative effects. It can be used to stop cutaneous diseases and skin aging. Later thinks about propose that supplementing intercellular lipids of the stratum corneum can upgrade the working of the skin. Within the epidermis, lipids of bee dust are pivotal ingredients that permit us to create the porousness obstruction that anticipates the movement of water and electrolytes through the stratum corneum that's fundamental for life (Xi et al., 2018).

Another animal products which used in cosmetics are snail products. The skin become soft with contacting the snail secretion. Snail secretion not only soften the skin but also heal the wound or infection very quickly. The snail secretion consists of many substances such as collagen, vitamins, allantoin, mucopolysaccharides, elastin, and glycolic acid. These substances added in serum, creams, and cleansers for moisturizing, soothing, nourishing the skin, exfoliating and purifying, anti-stretch marks, anti-blemishes and anti-wrinkle on the skin (Verheyen et al., 2018; Verheyen et al., 2018).

Fatty acid (oils and fats) obtained from various species of insect especially *Tenebrio molitor*, *Hermetia illucens*, *Musca domestica*, *Acheta domesticus*, *Gryllodes sigillatus*, *G. assimilis* and *A. diaperinus* used in the cosmetic industry for making various products such as skincare, and soaps for softening the skin, reduction of water loss, wounds healing, and increase viscosity having anti-inflammatory characteristics (Sosa and Fogliano, 2017; Khosrowpour et al., 2019).

A red insect dye, cochineal or carmine obtained from *Dactylopius coccus* which used for dyeing the cloth, food, drugs, cosmetics and in dyeing textiles. This dye can be obtained after crushing the female beetles which used to dye lipstick, eye shadow and blush. Another ingredients obtained from lac scale insect (*Laccifer lacca*) used in shoe polishes, floor polishes, insulators, varnish, printing inks, and sealants etc. It is mostly used in nail polish remover (Wu et al., 2018; Cito et al., 2017).

Ingredients derived from land animals

Substances derived from land animals and used as ingredients in beauty products often result from animal sacrifice and/or are by means of merchandise of the beef and farm animals industries. While, inside the past, these materials have been extensively used, these days, their use has been reduced in choose of the use of plant analogs or synthetic materials. The exclusion of some natural elements,

which include civet oil and ambergris, is due to the safety of endangered species, to ethical troubles related to violence against animals, and to fitness and hygiene issues. Most of the cosmetic elements derived from land animals come from the livestock industry, especially collagen, elastin, and keratin. This is followed with the aid of the sheep enterprise, particularly for the extraction of lanolin, and the fowl industry to reap the animal source of hyaluronic acid. Fats, milk, and other less-used ingredients are acquired from geese, camels, horses, donkeys, minks, ostriches, pigs, and reptiles (Barros and Barros, 2020). It has been reported that from reptiles, Viper venom and fat ingredients obtained and used in different cosmetics for skin conditioning and emollient purposes, while castoreum obtained from bear used fragrance and skin conditioning (Abedin et al., 2020; Chatterjee et al., 2021). Stearic acid, placenta, magnesium stearate and lard ingredients obtained from swine utilized as moisturizer, emulsifier, viscosity controller, anticaking, surfactant, bulking, and cosmetic colorant in cosmetics as given in table 7.

Table 7. Cosmetic ingredients derived from land animals.

Cosmetics	Ingredients	Uses	Category
Bovine	Amniotic fluid, fat, elastin, collagen, keratin, bile, milk, sperm, allantoin, placenta	Soothing, antistatic, skin/hair conditioning and protecting, emollient, Humectant, film forming	Milk cosmetic
Duck	Fat, embryo	Skin/hair conditioning	-----
Camel	Milk	Skin conditioning	Milk cosmetic
Equine	Fat, milk	Skin conditioning, emollient	-----
Swine	Stearic acid, placenta, magnesium stearate, lard	Moisturizing, emulsifying, viscosity controlling, anticaking, surfactant, bulking, cosmetic colorant	-----
Caprine/ovine	Lanolin, milk, fat	Emollient, emulsifying, antistatic, surfactant, hair/skin conditioning, viscosity controlling	Milk and lanolin cosmetic
Ostrich/chicken	Egg, fat, albumen	Antistatic, hair/skin conditioning, viscosity controlling, antimicrobial	Egg cosmetic
Civet/mink/emu	Civet oil, mustele oil, fat	Hair/skin conditioning, emollient	-----
Beaver/bear	Castoreum, fat	Fragrance, skin conditioning	-----
Reptiles	Viper venom, fat	Skin conditioning, emollient	-----

Nguyen et al. (2020); Alamgir (2018).

Ingredients derived from marine animals

As the market length of the cosmetics enterprise will increase, the safety and effectiveness of recent products face better requirements. The marine surroundings selects for species of micro-organisms with metabolic pathways and version mechanisms distinct from the ones of terrestrial organisms, ensuing of their herbal merchandise displaying specific systems, excessive diversity, and considerable biological activities. Natural merchandise are commonly safe and non-polluting. Therefore, full-size effort has been committed to attempting to find cosmetic ingredients which might be powerful, safe, and natural for marine micro-organisms. However, marine micro-organisms may be hard, or impossible, to culture because of their special environmental necessities. Metagenomics technology can assist to resolve this hassle. Moreover, using marine species to supply greater green and environmentally friendly products through biotransformation has grow to be a brand new preference for cosmetic manufacturers (Ding et al., 2022).

The pores and skin is the most important organ of the human frame and performs an important shielding function (Resende et al., 2021). As people age, their skin turns into thinner and loses its original elasticity and moisturizing ability. Aged skin is dry, flabby, wrinkled, and increasingly fragile (Wang et al., 2015). Because pores and skin has prolonged contact with the outdoor international, outside factors, together with UV radiation, dust, and chemical reagents, can lessen skin's antioxidant ability and boost up its getting old rate. Skin care is crucial for retaining its appearance and fitness, but it also strengthens the barrier function of the pores and skin (Bedoux et al., 2014). The concept of pores and skin care is widely recognized. With the idea of skincare gaining recognition, many antiaging lotions, moisturizers, and sunscreens are on the market. However, the majority of cosmetics offered are composed of synthetic chemical compounds, which can also have dangerous side results (Morais et al., 2021).

Ingredients derived from marine animals, usually grouped into the so-known as Group C, are specially used as functional substances (as an instance, marine collagen). In other instances, they're used as basic substances such as fish oil or as cosmetic components. The fish components have used as cosmetics for skin and hair conditioning (Table 8). A sebum secretion charge as little as zero.5mg/10 cm² in step with 3h in human pores and skin will bring about dry skin (Endly and Miller, 2017). Excessive oil secretion may additionally affect the microbial environment of the face, leading to acne. In addition, this may cause enlarged facial pores and a greasy facial look (Hong et al., 2020). Therefore, it's far specifically crucial to smooth the face. Lipase can catalyze the hydrolysis of insoluble triglycerides into glycerol diesters and glycerol monomers (Yvergnaux, 2017) to supply cleansing facial oil.

Table 8. Ingredients obtained from marine animals

Cosmetics	Ingredients	Applications	Category
Starfish	Starfish powder	Skin conditioning	Egg cosmetics
Jellyfish	Collagen	Hair/skin conditioning	Egg cosmetics
Shellfish	Chitin	Hair fixing, film forming	Egg cosmetics
Cephalopods	Cuttlefish	Skin conditioning	-----
Seal	Seal	Skin conditioning	-----

The process of aging can affected by various factors like internal and external factors (Ganceviciene et al., 2012). The internal factors can change or affect the skin of the human which ultimately affect the age. External factors include smoke, temperature, ultra violet rays coming from sun and pollutants either primary, secondary or tertiary (Zhang and Duan, 2018). Due to these factors, collagen on the skin damage which ultimately reduce elastic fibers, and physical appearance of skin change (Brunt and Burgess, 2018) and skin cannot regulate the various metabolic process and undergo aging (Bedoux et al., 2014). There are large number of substances which obtained from marine animals and help in regulating such substances which help and regulate the metabolic process in the skin and prevent skin aging. The keratinocytes can be protected from oxidative damage with the help of fucoxanthin extracted from brown seaweed (Zheng et al., 2013) and another glycosaminoglycan facilitate skin regeneration during injury (Courtois et al., 2014; Borel et al., 2017; Garre et al., 2017).


CONCLUSION

This overview covers the latest studies and programs of natural products from plants and animals including marine, insects and land animals used in cosmetics. Starting from functional aspects, the mechanism and capability of natural compounds including proteins, phenols, nutrients, polysaccharides, enzymes, and peptides in the subject of cosmetics are summarized in this review of literature. The most common ingredients obtained from plants and animals are beeswax, honey, nectar, pollen, snail's slime, derivates, elastin, collagen, keratin, lanolin and chitosan. The application of such ingredients in cosmetics is an alternative method to prevent the body from adverse effect of chemicals. These cosmetics are made by using animals and plants parts such as oils

natural color, natural fragrances, and waxes to enhance the viscosity, flexibility and beauty of skin even to prevent the skin from different disorders.

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