Original article

The internal and external use of medicinal plants

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Introduction

There is a growing trend in skin care to use those materials that have had success in the growing dietary supplement preparations. The justification for using a plant, herb, or spice externally based on its internal therapeutic value bears no logic at all scientifically, and yet with surprising regularity there is justification for this way of thinking although sometimes the effects are in no way related.

Cautionary warnings in the UK

The term cosmeceuticals should be used with caution, as there are separate pieces of legislation that apply to pharmaceutical and cosmetics in the United Kingdom, which have corresponding legislation that applies to the European Union.

The manufacture of cosmetics and toiletries is more regulated than the food industry but not to the extent of the pharmaceutical industry. The comparison between the production of pharmaceuticals in terms of good manufacturing practice and the cosmetics and toiletries industry is not that dissimilar.

In Europe, the USA, and Japan, the laws are quite specific and although these three strive to ‘achieve parity, there are still many differences between the various legislative documents, particularly in the area of sun care, antiperspirants, and toothpaste.

The EEC has Council Directive 76/768/EEC up to the 27th amending Directive 2003/15/EC and including the previous 26 amendments and this has to be translated into the language of each member state; in the UK the law is


In addition, products must not infringe the Medicines for Human Use (Marketing Authorisations Etc) Regulations 1994, a very common infringement with today’s eagerness to have “alluring” pack copy. The Regulations provide that, unless exempt, any “medicinal product” to which Chapters II to V of Directive 2001/83/EEC apply must not be placed on the UK market unless it has a marketing authorization (product license) granted by the European Commission or by the UK Licensing Authority. The Act similarly provides that, unless exempt, any other “medicinal product” must not be sold or supplied without a marketing authority. A marketing authorization or product license is only granted for a product which meets statutory standards of safety, quality, and efficacy.

The status of many products on the “borderline” between medicinal products and food supplements, cosmetic or medical devices can be difficult to determine. The Medicine and Healthcare products Regulatory Agency have produced a Guidance Note 8 document to explain how and on what basis the MCA decides whether products are medicines or not. It includes guidance on the statutory procedures in Regulation 3A of the Regulations introduced by the Medicines for Human Use (Marketing Authorisations Etc) Amendment Regulations 2000 (SI 2000/292).

There is also the requirement to ensure that claims made on the packaging comply with the Trade Descriptions Act 1968, Control of Misleading Advertising Regulations 1988 (as amended). Products must also comply with the Weights and Measures Act 1985.

Certain categories (eg, insect repellants and products that contain this property) may also be subject to the Statutory...
without any real scientific study or analysis. The works of folklore, which passes from generation to generation, are less reliable sources are the Chinese, Indian system of Ayurvedic and Unani, African, and, more recently, Aboriginal traditional medicine.

Plants are complex chemical factories

A plant is a complex and ever active chemical factory that produces a wide range of chemical moieties that it requires for protection against yeast and moulds, resistance to insect attack, even the protection against ultraviolet and drought conditions in some specialist plants. Other coastal region plants require very specific protection against salts and excess minerals. It is this complex environment that produces many dozens of chemical entities that may have benefit in human treatments for various skin conditions.

The composition may vary according to the area of growth (country), the soil, the weather conditions, the time of harvest, the processing, and of course the part of the plant that is being extracted. The storage conditions of the plant, the time of extraction, and the solvents used in that extraction will all have a significant implication on the final chemical composition, for example, the content of natural preservatives produced by plants to protect the fruit and the leaves will fall dramatically once they have been separated from the main plant. This can be easily demonstrated by smelling a fresh bloom on a living rose and then cutting off that flower. In a matter of minutes, the rose note will alter drastically as the chemical composition alters.

The pharmaceutical industry and the purists would always prefer to work with single chemical entities derived from a single plant. Although this sounds a perfect solution for reproducibility, the truth is very different. Plants tend to have a full orchestra of individual phytochemically active materials that work synergistically in harmony. The overall result is that the effect of the individual components is far outweighed by the blend. In Traditional Chinese Medicine, the normal herbal treatment is tailored for an individual and targets both underlying causes and their effects. In the Far East, they recognize that in some seasons a particular plant may lack potency but that another plant attributed with having the same effect is substantially rich and effective, that is, one plant thrives in a rainy season but suffers in a hot dry season and vice versa. Blends that involve 8 or more herbal materials is not uncommon with each pair acting on different indications, like pruritis, erythema, edema, circulation, granulation, re-epithelialization, and cicatrization. Although the terminology used in Traditional Chinese Medicine may seem strange to Westerners, the correlation to terms we do understand and theirs is an almost perfect match.
Fatty acids

The simplest treatment of dry skin conditions is with fixed vegetable oils. Many of these vegetable, nut, seed, and kernel oils are simple blends of fatty acids with varying carbon chain lengths. Coconut, sunflower, safflower, rapeseed, corn, or sesame seed oil will give perfectly acceptable skin coverage and are most often used as carrier oils for essential oils. These oils will coat the skin, to occlude and protect it by slowing down transepidermal water loss and so increasing hydration within the stratum corneum and top layers of the dermis. They will also “glue down” dry and desquamatus skin cells to make the skin look less rough and scaly.

Some oils like castor seed oil (Ricinus communis) are renowned not only for their very high gloss (and so a frequent component in lipsticks and lip salves), but also for their high degree of occlusiveness which makes them ideal for skin protection, for example, diaper or nappy rash creams, where the most traditional and best known example would be zinc and castor oil cream.

Other oils like evening primrose oil (Oenothera biennis), borage (aka starflower), seed oil (Borago officinalis), and blackcurrant seed oil (Ribes nigrum) are particularly useful because of their high γ-linolenic acid content. Evening primrose used to hold a pharmaceutical license for use on atopic dermatitis, but subsequently lost this status on the publication of further clinical trial data. It is still widely taken orally for mastitis (breast pain).

A new oil made commercially available in 2006 is Inchi oil (Plukentia volubilis) which also has the name Aztec peanut—although it is totally unrelated to the peanut (Arachis hypogaea). This oil is abundant in ω-3, ω-6, and ω-12 fatty acids, and could well show huge promise in skin care.

Another that is rich in γ-linolenic acid is a particular species of rose hip seed oil (Rosa aff rubiginosa) that is collected in the foothills of the Chilean Andes and often called Rosa moschata. This oil is reputed to contain vitamin A according to some references. A large body of evidence (mainly anecdotal clinical) suggests that this oil has exceptional cicatrizing properties and is an excellent oil for restoring skin elasticity especially for postsurgical conditions where tightness has become a problem for the patient. It was also shown to be effective for treating the hyperpigmentation of certain scar tissue.

Flavonoids

_flava_ means yellow in Greek and the collective name of flavonoids for this group of compounds was proposed by Geissman in 1952. This is a very large group of compounds showing extraordinary diversity and variation and as the Greek root for the group suggests, as many of these compounds are yellow in color.

They consist of a number of structurally related groups of products, which are often identified as polyphenols. Many have a basic skeleton that contains 15 carbon atoms, which are usually subdivided into one part made up from a phenolic (C6) moiety and another which has a cinnamic acid molecule (C13) as a building block. The group called the chalcones may be considered as the Friedel-Crafts reaction product of a (substituted) cinnamic acid and a phenol.

Flavonoids may be found as their glycosides. These are molecules that are substituted on one or more of the hydroxyl groups with a sugar such as galactose, glucose, mannose, or rhamnose, etc. The aglycons do not carry a sugar moiety.

Reductive ring closure of chalcones results in the formation of a flavone. Naringenin chalcone is converted to naringenin by ring closure, from which apigenin (4′,5,7-trihydroxyflavone) is then formed.
Flavones are generally found in herbaceous families such as Labiatae, Umbelliferae, and Compositae. Important flavones are apigenin (*Apium graveolens* [celery], *Carum petroselium* [parsley]; 4′,5,7-trihydroxyflavone), luteolin (*Equisetum arvense* [horsetail] 3′,4,5,7-tetrahydroxyflavone), and diosmetin (3′,5,7-trihydroxy-4′-methoxyflavone). Many flavones occur as glycosides. Flavones also occur in nature in association with tannins (polyesters of gallic acid; 3,4,5-trihydroxybenzoic acid). Gallic acid and its esters (eg, propyl gallate, dodecyl gallate) are well known as powerful antioxidants, and, probably, these products fulfill a similar role in higher plants.

Next to the O-glycosides, flavones also occur as C-glycosides. This has not been reported for other flavonoids. Examples of O-glycosides are vitexin (3′,4′,5-trihydroxy-2-glucosylflavone) and isovitexin (3′,4′,5-trihydroxy-4-glucosylflavone).

The simplest representative of the group of flavones is “flavone,” which does not carry any hydroxy, methoxy, or glycosidic groups. It naturally occurs as “dust” on flowers and leaves.

An interesting synthesis of flavones is by ring expansion of 2-benzylidene coumaran-3-ones (Wheeler). These substances are known as aurones, and several have been reported to occur naturally. In aurones, the 6-membered heterocyclic ring is replaced by a 5-membered ring. An example of an aurone is sulfurietin, 6,3′,4′-trihydroxyaurone.

Flavones with a hydroxy group on the 3-position (3-hydroxyflavones) are usually considered as a separate group and are named flavonols. To this group belongs the most important product quercetin (3,3′,4′,5,7-pentahydroxyflavone). An important commercial source for quercetin is the glycoside quercetin, which is present in large amounts in the bark of *Quercus tinctoria*.

Quercetin is also present in significant concentration in *Ruta graveolens* (rue), *Fagopyrum esculentum*, and *Sambucus nigra* (elder flower). Quercetin is a very potent phosphodiesterase inhibitor with significant application potential. Quercetin is probably the most frequently occurring botanical pigment, and many glycosides of quercetin have been isolated and identified.

![Fig. 6] Kaempferol.

Other interesting flavonols are galangin (3,5,7-trihydroxyflavone; galanga root) and gossypetin (gossypol; 3,5,7,8,3′,4′-hexamethylflavone; occurs in *Gossypium herbaceum* [cotton]). Gossypetin has anticarcinogenic, antiviral, and anti-allergic activity, and is active against infections with Trypanosomes, fsetin, and rhamnetin.

**Isoflavones**

Isoflavones have the phenyl group attached to the 3-position, whereas in flavones the phenyl group is attached to the 2-position. The isoflavones are mainly found to occur within the Leguminosae (specifically in the subfamily Papilionoideae), although the literature shows many other species that contain these chemical moieties.¹ Isoflavones are also found in other botanical families such as the Compositae, the Iridaceae, the Myristicaceae, and the Rosaceae.

Isolactones are phytoestrogenic steroidal mimics of estradiol (Figs. 1 and 2). The activity of phytoestrogen is much weaker than the steroidal estrogen, varying from 0.005% to 2%.³ The estrogenic properties are insufficient in strength to replace steroidal estrogens, but they do have significant value when it comes to reducing the effects of ageing and improving the quality of the skin.

Phytoestrogens may also be viewed in relation to the phytochemical division of terpenoids, which comprise the largest group of natural plant products. All terpenoids are derived biogenetically from isoprene. The largest group of
Fig. 8 Estrogen receptor with daidzen.

Fig. 9 Estrogen receptor with 17β-estradiol.

Fig. 10 Stigmasterol.

Fig. 11 β-Sitosterol.

Fig. 12 Corticosterone.

Fig. 13 Hydrocortisone.

Fig. 14 Malonyldaidzin.

Fig. 15 Acetyldaidzin.
terpenoids is the triterpenoids, which include, among other divisions, the triterpenoid and steroid saponins, and, the phytosterols. The phytoestrogens fall into these 3 categories.

In addition, nature has a rich portfolio of phytosterols. It is easy to understand why sterols like stigmasterol (Fig. 3) and β-sitosterol (Fig. 4) have an effect that is anti-inflammatory and capable of reducing swelling and erythema, when their structure is compared to corticosterone (Fig. 5) and hydrocortisone (Fig. 6).

The most commonly occurring isoflavones are

- Biochanin-A 5,7-dihydroxy-4′-methoxyisoflavone
- Daidzein 4′,7-dihydroxyisoflavone
- (+/-)-Equol 4′,7-isoflavandiol
- Formononetin 7-hydroxy-4′-methoxyisoflavone
- Glycitein 4′,7-dihydroxy-6-methoxyisoflavone
- Genistein 4′,5,7-trihydroxyisoflavone
- Genistein-4′, 5-hydroxy-4′,7-dimethoxyisoflavone
- 7-dimethylether
- Prunetin 4′,5-dihydroxy-7-methoxyisoflavone

with the associated glucosides

- Genistin glucosyl-7-genistin
- Glycitin 4′,7-dihydroxy-6-methoxyisoflavone-7-d-glucoside
- Ononin formononetin-7-O-glucoside
- Sissotrin Biochanin A-7-glucoside

**Daidzein**

Daidzein is a solid substance that is virtually insoluble in water. Its molecular formula is C_{15}H_{10}O_{4}, and its molecular weight is 254.24 da. Daidzein is also known as 7-hydroxy-3-(4-hydroxyphenyl)-4H-1-benzopyran-4-one and 4′,7-dihydroxyisoflavone. Daidzin, which has greater water solubility than daidzein, is the 7-β glucoside of daidzein.

Daidzein is an isoflavone. It is also classified as a phytoestrogen as it is a plant-derived nonsteroidal compound that has estrogen-like biological activity. Daidzein is the aglycone (sometimes called the aglucon) of daidzin (see Fig. 1). The isoflavone is found naturally as the glycoside daidzin and as the glycosides 6″-O-malonyldaidzin (Fig. 7) and 6″-O-acetyldaidzin (Fig. 8). Daidzin and its glycosides are mainly found in the Leguminosae family that includes soy beans and chickpeas.

Soybeans and soy foods are the major dietary sources of these substances. Daidzin glycosides are the second most abundant isoflavones in soybeans and soy foods; genistein glycosides are the most abundant.

Nonfermented soy foods, such as tofu, contain daidzein, principally in its glycoside forms. Fermented soy foods, such as tempeh and miso, contain significant levels of the aglycone.

**Kudzu vine (Pueraria labata)**

The roots of *P. labata* is an herbal medicine commonly known as the kudzu vine. It has been used for centuries in traditional Chinese medicine for the treatment of alcohol abuse and thought to be effective because of the daidzein and daidzin found in the herb. A study on Syrian Golden Hamsters suppressed the alcohol choice.

**White kwao krua (Pueraria mirifica)**

In addition to genistein, daidzein (see above), daidzin, and genistin, the plant contains a some unique isoflavones, kwakhurin, kwakhurin hydrate (Fig. 9), and puerarin (Fig. 10), to name but a few.

The roots also contain mirificoumestan (Fig. 11), deoxymiroestrol (Fig. 12), and coumestrol (Fig. 13). The traditional use of the plant is clearly for the hormonal properties, as in Thailand it is used for breast development. When *P. mirifica* is taken as a dietary supplement, its phytoestrogen constituents will naturally alleviate symptoms.
occurring as a result of the aging process and a deficiency in estrogen levels, for example, sagging breasts, wrinkled skin, bone loss, gray hair, etc. These aging signs and symptoms will, to a certain extent, be reversed.

The rich source of sterols and phyto-hormones also indicates the plant for the topical treatment of wrinkles and aging skin conditions.

Red clover (Trifolium pratense L) (Leguminosae)

The flowerheads are used and they contain the following isoflavones: biochanin A, daidzein, formononetin, genistein, pratensein, and trifoside. The plant has alterative, antispasmodic, and expectorant properties, and is a sedative dermatologic agent. Its main use is an alterative and for skin complaints such as psoriasis and eczema, as well as an expectorant use in coughs and bronchial conditions.17,18

Biochanin A (Fig. 14) and formononetin (Fig. 15) are 2 isoflavones from red clover and are just like genistein and daidzein, except that they have methyl groups replacing the hydroxyl groups.19

These 2 isoflavones are considerably less estrogenic in their original forms, because the stereochemistry of the methoxy groups means they are not able to bind to the estrogen receptors as efficiently.20

However, once these molecules are ingested, bacteria in the colon are able to remove the methyl groups—biochanin A becomes genistein (Fig. 16) and formononetin becomes daidzein (Fig. 1 see above). Daidzein can be further metabolized to equol (Fig. 17).21

Internally, biochanin A and formononetin are then able to be a source of considerable estrogenic activity.22

It may well be that these mechanisms give red clover its reputation as an alterative remedy, cleansing the system yet mild enough for many children’s skin problems, even eczema. A lotion of red clover can be used externally to give relief from itching in skin disorders. Specific for acne, boils, and similar eruptions, including eczema and skin problems especially where irritation is a factor.14

Historically, the flower tea has been used as an antispasmodic, expectorant, and mild sedative. It is also recommended for athlete’s foot, sores, burns, and ulcers,23 and has been used in the herbal treatment of cancer, especially of the breast or ovaries.26

Red clover is also a very popular remedy as the alternative for hormone replacement therapy and is sold extensively for this purpose.

Sweet yellow melilot (Melilotus officinalis)

Melilot is soothing, lenitive, astringent, refreshing, and anti-irritant, and has similar properties to the red clover described above. It is also described as possibly having the additional properties of being anti-inflammatory, anti-edema, a veinous astringent (hemorrhoids), and anesthetic.9

It is perhaps not the isoflavones at force here, however, but may be the β-sitosterol or coumarin the roots contain. Melilotus officinalis L extract, containing 0.25% coumarin (Fig. 18), was studied on acute inflammation induced with oil of turpentine in male rabbits. M officinalis had anti-inflammatory effects because it reduced the activation of circulating phagocytes and lowered citrulline production.31

These properties were similar to those of hydrocortisone sodium hemisuccinate and coumarin.32

Phytosterols and related compounds

The benefits of these phytosterols may be seen in the common herbal materials indicated for arthritis, such as Frankincense (Boswellia serrata). The boswellic acid
Q4 (Fig. 19) present inhibits 2 inflammatory enzymes, 5-lipoxynase (which produces leukotrienes) and human leukocyte elastase HLE (which degrades elastase).


The Department of Biochemical Pharmacology, Imperial College School of Medicine prepared a paper for discussion: “Assessment of the estrogenic potency of phyto-compounds”. This reviewed the available information on cellular and molecular mechanisms and phytoestrogen estrogenic potencies. Of the 28 points (statements for comment really) the following stood out.

Taking all estrogen receptor binding assays into account the review proposed the following rank order of phytoestrogen potency: estradiol > coumestrol > 8-prenylnaringenin > equol > genistein > biochanin A > daidzein > genistein glucuronide* > daidzein glucuronide* > formononetin (the activity of those compounds marked * may be due to the presence of activating enzymes present in the receptor preparation).

Phytoestrogens stimulated in vitro cell proliferation at concentrations of 0.1 to 10 mmol/L (3- to 4-fold less than estradiol). They did not induce the maximal proliferative effect of estradiol as higher concentrations inhibited proliferation.

The majority of endogenous estrogens (>90%) were not freely available but bound to plasma proteins. Phytoestrogens bound at 1/100th to 1/1000th the affinity of estradiol.

The availability of phytoestrogens in plasma relative to estradiol will be greater.

Coumestrol, 8-prenylnaringenin, and equol were more than 10 000-fold less potent. The wild yam (Dioscorea villosa) were more than 1000-fold less potent than estradiol and the isoflavones were more than 10 000-fold less potent.

Commercial source of pregnanolone (Fig. 21) and progesterone (Fig. 22) used as the first birth control pills. The root of Dioscorea is used for numerous purposes, but the major use is for the suppression of menopausal symptoms like hot flushes.

There are many other sources of diosgenin.

During pregnancy, small frequent doses will help allay nausea. It is antispasmodic. It is valuable neuralgic affections, spasmodic hicough, and spasmodic asthma. It is spasmolytic, a mild diaphoretic. It has potential in skin care and body care being anti-inflammatory and anti-rheumatic.

It is also cited for dysmenorrhea, ovarian, and uterine pain, perhaps showing the power of this herbal root.

It is interesting to note that Vitex agnus-castus is a source of natural progesterone. Proprietary preparations containing this material have been available in Germany since the 1950s and many documented studies have investigated the use of these products to treat various gynecologic disorders. The fruit of Vitex contains essential oils, iridoid glycosides, and flavonoids. Essential oils include limonene, 1,8 cineole, and sabine. The primary flavonoids include castican, orientin, and isovitexin. The 2 iridoidglycosides isolated are agnuside and aucubin. Agnuside serves as a reference material for quality control in the manufacture of Vitex extracts. One other report demonstrated δ-3-ketosteroids in the flowers and leaves of Vitex that probably contained progesterone and 17 δ-hydroxyprogesterone. The active constituents have been determined as 17-α-hydroxyprogesterone (leaf), 17-hydroxyprogesterone (leaf), androstenedione (leaf), δ-3-ketosteroids (leaf), epitestosterone (flower), progesterone (leaf), and testosterone (flower and leaf).

It is highly unlikely that the diosgenin in the plant could ever be synthesized on the topical application to the skin to form a corticosteroid or hormonal derivative. It does seem likely, however, that this material (being the precursor to these estrogenic molecules) will, to some extent, mimic the

The wild yam (Dioscorea villosa)

The wild yam (D villosa) was the source of diosgenin (Fig. 20), a steroidal saponin used as the starting point for the

Fig. 20

Fig. 21

Fig. 22

Fig. 23 Genistein.

Fig. 24 Equol.
function of those pharmaceutical active materials and benefit the skin.12

The production of wild yam, however, was unable to sustain the demand for diosgenin as the starting precursor, for the production of birth control materials, which by this stage was dominated by estrone (Fig. 23).

Fenugreek (Trigonella foenum graecum)

The world turned its attention to fenugreek (T. foenum graecum) for its source of diosgenin. Fenugreek or foenugreek seeds are emollient and accelerate the healing of suppurations and inflammations. Externally cooked with water into a porridge and used as hot compresses on boils and abscesses in a similar manner to the use of linseed.15

Decoctions of whole plant are used as a bath for uterus infections. The seeds are tonic, restorative, aphrodisiac, and galactagogue. Their emollient properties are useful for the itch. A cataplasm obtained by boiling the flour of the seeds with vinegar and saltpeter is used for swelling of the spleen.2

Extracts of the seeds are incorporated into several cosmetics claimed to have effect on premature hair loss, and as a skin cleanser,19 and it is also reported in Java in hair tonics and to cure baldness.22 Many of the herbal materials found to have an effect on hair growth have a hormonal or hormonal-mimetic basis.

Likewise, there are a number of references to fenugreek having galactagogue (increase milk in nursing mothers) activity,6,7,26 which again is indicative of an estrogen-like activity. The plant should be used with caution as fenugreek is reputed to be oxytocic and in vitro uterine stimulant activity has been documented,27 so the use of fenugreek during pregnancy and lactation in doses greatly exceeding those normally encountered in foods is not advisable.

Pomegranate (Punica granatum)

Pomegranate is one of the many plants that contain substances with hormone-type action. The seeds of pomegranate, that ancient symbol of fertility, were found to contain an estrone identical with the genuine hormone. Punica granatum seeds are the best source of plant estrone to date.26

The antioxidant and eicosanoid enzyme inhibition properties of pomegranate (P. granatum) fermented juice and seed oil flavonoids were studied, which showed strong antioxidant activity (determined by measuring the coupled oxidation of carotene and linoleic acid) close to that of butylated hydroxyanisole and green tea, and significantly greater than that of red wine.32

This is clearly a fruit worthy of further exploration, especially as most of the information to date relates to the use of the bark, seeds, and the roots as a tenicide (expelling worms). The rind is used as an astringent.24,25 The leaf has antibacterial properties and is applied externally to sores.34

Date palm (Phoenix dactylifera)

Body hormones play a central role in skin appearance and are implicated in skin aging. Studies have shown that the decrease of these hormones plays an important role in skin endogenous aging, reduced skin thickness, and the disturbance of normal collagen turnover which, in turn, results in a decrease in collagen I and III synthesis. Date palm has 7
compounds with regenerative, anti-oxidizing, firming, and soothing properties, extracted from the kernel: phytosterols, phytosteroinds, ursolic acid, isoflavones, picoconsolons, panto

vitamin A, and vitamin E.

Some studies suggest that dehydroepiandrosterone (DHEA; Fig. 24) administration would have a beneficial effect against signs of aging. Dehydroepiandrosterone is known for its capacity to promote keratinization of the epidermis or to reinforce the barrier function of the skin.

The author compared on ex vivo skin the effects of date palm kernel extract with those of DHEA in reference to DHEA as an anti-aging molecule. There was a decrease of wrinkles within only 5 weeks of date palm kernel extract application and also improved the skin structure in a way superior to that of DHEA.10

The seed and the pollen have both been shown to contain estrone and this may further explain the reasons for this activity.11,28

Hops (Humulus lupulus)

The hop contains β-sitosterol, estradiol, stigmasterol, and estrone. In addition, it contains many other materials that are known for their sedative and relaxing attributes.

Regular doses of the herb can help regulate the menstrual cycle.21 It was the girls and women picking hops who first discovered that hops have an effect on genital organs. Before machines were introduced, hop pickers used to spend several weeks at this work, and it had always been known that menstrual periods would come early in young girls while they were doing this work. The reason is that hops contain plant hormones, particularly when very fresh, and these are similar to estrogens. Considerable amounts have been found, 30,000 to 300,000 IU of estrogen in 100 g of hops. This also explains why hops will suppress sexual excitement in men. It has been shown that there are substances called antiandrogens that are able to cancel the effects of the male hormone (androgen).36

It was found that hop extract not only recovered the proliferation of hair follicle–derived keratinocyte suppressed by androgen but also stimulated the proliferation of hair follicle–derived keratinocyte. Furthermore, the effects of hop were evaluated using both animal tests and human volunteers in vivo. It was demonstrated that hop showed a potent acceleration on hair growth.29

Sarsaparilla (Smilax ornate)

It is used in concoctions with other plants as a tonic or aphrodisiac.33

Sarsaparilla was formerly used in the treatment of syphilis,8 gonorrhea,18 rheumatism, and certain skin diseases. Used in soft drinks, the genins are also used in the partial synthesis of cortisone and other steroids.14 As part of a wider treatment for chronic rheumatism, it should be considered as it is especially useful for rheumatoid arthritis. It has been shown that sarsaparilla contains chemicals with properties that aid testosterone activity in the body.17

Sarsaparilla contains saponins, sarsaponin, and parillin, which yield isomeric sapogenins, sarsapogenin, and simeol

Genin. It also contains sitosterol and stigmasterol in the free form and as glucosides. It is antirheumatic, antiseptic, antipruritic, and is indicated for psoriasis, and other cutaneous conditions. Like other steroidal plants it is indicated for chronic rheumatism and rheumatoid arthritis. It is specifically used in cases of psoriasis especially where there is desquamation.

Sugars, polysaccharides, mucopolysaccharides

The skin seems to have an affinity for sugars and there are many examples where they have been shown to have a significant effect on the skin. Honey is the first choice when looking for a natural source of these sugars. In third world countries and poorer communities, honey has been shown to be of great benefit in the treatment of burns, scalds, and wounds, especially as it has the additional benefit of having antibacterial properties when used neat. Re-epithelialization is improved, the granulation is even, and there is less necrotic tissue formed. The exudates often associated with severe skin trauma of this type can be a problem with adhesion to dressings and to the routine cleaning of the affected site. Honey absorbs these exudates and makes simple noninvasive cleaning simple and painless.

Mucopolysaccharides are present in numerous plant materials, such as the ribwort and greater plantains (Plantago and P officinalis); these mucilages as they are also called may be found in numerous species of seaweeds like bladderwrack (Fucus vesiculosus), sea lettuce (Ulva lactua), and Oarweed, Tangleweed, or Kombu (Laminaria digitata). The use of these plants has similar effects reported and in the most part they are used for dry, desquamatous, pruritic skin conditions.

References


3. A.C. Dweck

Fig. 31 Prasterone or DHEA.
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