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ETHNOBOTANICAL PLANTS FROM AFRICA
PART TWO

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INTRODUCTION

In the last article we examined some of the aromatic plants that were used in the cosmetic and toiletry industry that came from Africa. In this paper we are going to look at some of the emollient oils, and aqueous extracts that have benefit in the treatment of the skin and hair. Some of the materials are already in common use, but an attempt has been made to introduce some new botanicals that may not be currently commercially available in our industry.

1. EMOLLIENTS

1.1. BAOBAB

An interesting tree is the baobab, monkey-bread tree, sour gourd, cream of tartar tree, e, lemonade tree, (in Afrikaans) as Broodboom, kremetartboom, bobbejaanbroodboom. In Zulu as Isimuhu, umshimulu or *Adansonia digitata* (Family: Bombacaceae). This is a deciduous tree that occurs throughout Africa, especially in East Africa. It is reputed to have the thickest trunk and to be the longest-lived of any tree in the world and is known to achieve ages of up to 3,000 years.

Historically, the tree has been known for a long time and even appears in the U.S. Dispensary of 1883. "The leaves and bark of the tree abound in mucilage, and have little smell or taste. By the Africans, the leaves are used as a diaphoretic, and the subacid pulp of the fruit in dysentery. The bark is highly commended by some as an anti-periodic¹ (preventing the return of recurring diseases such as malaria).

The traditional method of oil extraction is by pounding the seeds. The oil thus produced is used as a rub to relieve aches, pains and rheumatism, but more especially, to treat skin complaints such as eczema and psoriasis. The seeds are embedded in the dry acidulous mealy pulp which is rich in mucilage, pectins, tartrates and free tartaric acid. The presence of tartrates gives rise to the name "Cream of Tartar tree". Calcium and, when eaten raw, vitamins B and C are abundant. Indeed, the fruit is an important source of ascorbic acid (vitamin C) offering 2.73mg/100g fresh fruit. The fruit pulp and seeds are used as a dysentery remedy in Central Africa.

A decoction of the fibres lining the fruitshell is given for amenorrhoea. The leaves find use as a diaphoretic and in the treatment of excessive perspiration (Sierra Leone), in kidney and bladder diseases and for asthma; their analysis reveals tannins, potassium tartrate, catechins and a flavonic pigment: adansonia flavonoside². Their mucilage contains galacturonic acid and rhamnose³.

The leaves have hypotensive and antihistaminic properties and the leaf-powder has been suggested as an anti-asthmatic⁴. In local medicine, the bark (and also the dried leaves made into preparation called lalo) are used as a diaphoretic and febrifuge⁵. They are used as prophylactic against malaria in Sierra Leone. They are rich in a mucilage containing uronic acids, rhamnose and other sugars, they also have quite a high calcium content. General applications of the leaf are used for kidney and bladder diseases, asthma, general fatigue, as a tonic, a blood cleanser, prophylactic and febrifuge, for diarrhoea (because of their astringent effect), inflammations, insect bites, the expulsion of guinea worm, internal pains and other affections. Dysentery is treated by mouth or in hip-baths, and asthma, sedation, colic, fevers, inflammations, diseases of the urinary tract, ear troubles, backache, ophthalmia, wounds and tumours, respiratory difficulty, etc., are treated by lalo by mouth or in liquid preparations. The leaves are considered an emollient and diuretic. The leaf decoction is used for earache and otitis (inflammation).

The bark contains a quantity of edible, insoluble, acidic tragacanth-like gum. This is used for cleaning sores. In Congo the bark decoction is used to bathe rickety children, and in Tanganyika as a mouthwash for toothache. A soap lye can be made from the bark ash.⁶

In Ghana, the bark is used as substitute as quinine in cases of fever. In Southern Rhodesia, the leaf is eaten as a vegetable, while in Central Africa it is used as a diaphoretic against fevers. The seed are a remedy for dysentery. In Messina, the powdered seed is given for hiccough in children⁷.

The kernel is rich in protein and thiamine, 100 g daily is an adequate human adult requirement. Oil content by ether extraction is recorded as 68% of the kernel. The oil is non-drying and consists of stearic, palmitic and oleic acids. Roasted seeds are crushed to a paste which is applied to diseased teeth and gums, this mixture is also used for toothache. A decoction of the roasted seeds is useful in cases of diarrhoea and dysentery⁸, but is also used as a substitute for coffee.

A tree can hold at least 1000 gallons of water (some references quote nearer 2,000 gallons) in the hollow trunk⁹, and has been used as a source of water in times of drought. The wood is also salty when burnt to an ash and is thus valuable to tribes who have little contact with civilisation and thus no access to salt. The ash of most parts of the tree is a source of potash and is often used to make soap.

In Zambia an infusion of the roots is used to bath babies in order to promote a smooth skin¹⁰.

Both the pith and the seeds, like the bark, seem to contain an antidote to strophanthus poisoning and are carried by a special member of the Shangaan hunting party. An emulsion of the pith is used by the Fulani herdsmen to adulterate milk, a popular drink with the Kaura farmers whom the Fulani supply.

A. digitata is used in folk medicine as an antipyretic and febrifuge. In an experiment with Wistar rats, the aqueous extract of *A. digitata* fruit pulp (prepared from Sudanese fruits) exhibited significant antiinflammatory and antipyretic activities at both 400 and 800 mg/kg p.o. Oral administration of the extract to Balb/c mice at 800 mg/kg had a significant analgesic effect, and a slight analgesic effect at 400 mg/kg. In an acute

toxicity test with mice, i.p. administration of the extract gave an LD50 value of 8000 mg/kg. Phytochemical screening of the fruit pulp indicated the presence of sterols and/or triterpenes, saponins, tannins, carbohydrates and glycosides¹¹.

This illustrates how one tree can be a source of tremendous importance in village life, since it provides food, emergency water, medicine and cosmetics. It is hardly surprising that horrific legends surround the tree, and terrifying curses to anyone who would be stupid enough to vandalise or harm it.

1.2. MANGO

Another tree of great importance is the mango or *Mangifera indica* Linn., which apart from its use as an edible fruit, also has kernels which yield a valuable emollient butter (rich in oleic and stearic acids) that is used in the cosmetic industry. It has a number of different names *Mangifera domestica* Gaertn, Sinhalese: Amba; Tamil: Adishelarayam, Ambiram, Amiram, Iradam, Kachakkar, Kilimukkuma, Kogilosavam, Kokku, Maa, Madi, Madududam, Manga, Magandam, Malai, Mamagam, Mandi, Manmadamganai, Mattiyagandam, Mirudalagam, Omai, Palashiratta, Palerbatti, Pigubandu, Shedaram, Shegaram, Shudam, Shulli, Tema, Tevam, Tidalam; Hindi: Am; Sanscrit: Aliprya, Amra, Atisairrabha, Bhramarapriya, Bhiringabhishta, Chukralatamra, Chuta, Chutaka, Gandhabandhu, Kamanga, Kamaphala, Kamarasa, Kamashara, Kamavallabha, Kameshta, Keshavayudha, Kireshta, Kokilananda, Kokilavasa, Kokilotsava, Koshi, Madadhya, Madhavadruma, Madhutduta, Madhukara, Madhuli, Madhvakhya, Mrishalaka, Nilakapittha, Nriyapapriya, Parapushtamahotsava, Phalashreshtha, Phalotpatti, Pikapriya, Pikaraga, Pikavallabha, Priyambu, Rasala, Sahakara, Shatpadatilhi, Shareshta, Shukrapriya, Sidhuras, Sripriya, Sumadana, Vanotsura, Vasantadru, Vasantaduta⁷.

It has a very pleasant feeling when applied as the pure oil to the skin. The main part of the oil consists of triglycerides and these give high emolliency to the skin. It has a very slightly sweet scent.

It vaguely resembles a kidney-shaped peach, tapering at the top, with a fragrant and juicy pulp and a distinctive flavour, something between the apricot and the pineapple. The mango tree, *Mangifera indica* of the Anacardiaceae or cashew family, is one of the most productive plants of the tropical region¹². It was probably introduced into Africa in the 16th century by the Portuguese¹³.

This tree is found all over the tropical regions of the world and so the referenced uses will not be restricted to the African continent.

The fruits of mango contain protein, fat, carbohydrate, minerals, vitamins A, B and C. The amino acids detected are: asparaginic acid, glutamic acid, asparagine, serine, threonine, alanine, arginine, gamma-amino butyric acid, tyrosine, valine, isoleucine, phenylalanine, leucine¹⁴. The fruits also yield a resin which is said to contain mangiferene, mangiferic acid, resinol and maniferol. The fruits which are consumed contain saccharose, levulose, dextrose and citric, tartaric and malic acids, in addition to carotene.

The leaves contain, saponins, glycosides, unsaturated sterols, polyphenols euxanthin acid, euxanthon, hippuric and benzoic acid, mangiferin and mangin. The leaves of the West African species have four anthocyanidins, leucoanthocyanins, catechic and gallic tannins, mangiferin, kaempferol, and quercetin have been reported¹⁵.

All parts of the mango tree (bark, leaves, root fruit) are rich in tannins.

Camphene, ethyl styrene, isolongifolene, alpha-bergamotene, aromadendrene, alpha-murolene, butyric and hexanoic acids, benzyl and furfuryl alcohols, 2-acetyl pyrrole and dihydroactinidiolide have been reported. Additionally, a sesquiterpenic hydrocarbon identified as eremophilene, first isolated from valerian oil has been reported¹⁶.

The seeds possess a fixed oil with oleostearin, starch, gallic acid and tannin and the entire plant and the seeds also contain traces of hydrocyanic acid¹⁷.

In South America, the Tikuna Indians of Colombia use a decoction of the leaves as a contraceptive, and the plant has also been used as an abortifacient. The Chacobo Indians of Bolivia drink a similar decoction for rheumatism, while the Créoles of French Guiana take it for diarrhoea and stomach ache. The Palikur Indians of French Guiana treat babies with prickly heat with plasters of the mashed leaves, and the Créoles of the Antilles drink a decoction of the flowers for angina and asthma. The leaves possess antibiotic properties and are used by the Warao Indians to treat fevers, coughs and diarrhoea.¹⁸

The Negritos of the Philippines utilise the gum resin of the tree mixed in with coconut oil to apply directly to scabies and other parasitic diseases of the skin. The gum resin and the fruit are also used for healing sores caused by herpes and venereal disease like syphilis. The ashes of the leaves are a popular remedy for burns and scalds. The resin is also used for curing aphthae (white spots in the mouth)¹⁹.

The Indians use mango leaves to relieve the pain of scorpion stings and the unripe fruit to help heal a wide variety of skin eruptions, ranging from leprosy and sores to boils and cysts²⁰.

In Samoa the inner bark is used for treating mouth sores. It is also used for lesions of the urinary-genital area. The pulp of the ripe fruit is used as a poultice for tender breasts and sore nipples²¹.

Mango kernel has been investigated for its suitability as an ointment base. It has been observed to release a drug like salicylic acid at a remarkably greater rate than the standard paraffin-base ointment formulation²².

1.3. COCONUT

The last example of an emollient oil must be Coconut oil or *Cocos nucifera* [Syn. *Palma indica major*, *Cocos mamillaris* Blanco] (Family: Palmae). It is known by a number of names: Gos el-hind (Arabic); coco (Bambara); kwarkwarattagara (Hausa); aki-beke (Igbo); nazi (mbata=copra) (Swahili:); igi agbon (Yoruba). In Sanskrit this palm is called kalpa vriksha, which means "tree which gives all that is necessary for living"¹¹.

The plant is the major crop in Ghana, Ivory Coast, Kenya, Nigeria, Mozambique, Togo, Somalia, Seychelles, Malagasy republic, and Tanzania. The palm often lives for a hundred years or more and provides local villagers with milk, nuts, molasses and oil.

It is an ingredient that perhaps is so common that we take it for granted.

Harry says that it was formerly the main ingredient in marine soaps, as coconut oil was - unlike other soaps - not readily precipitated by salt solutions. Coconut oil is an important source of aliphatic alcohols used in the manufacture of synthetic detergents. The soaps of coconut are irritant to some people, apparently due to the presence of alkali laurates²³.

According to the British Pharmaceutical Codex (1973) coconut oil is used as an ointment basis, particularly in preparations intended for application to the scalp²⁴.

The oil expressed from the kernels (about 30-65%) of *Cocos nucifera* contains trimyristin (about 20%), trilaurin (about 50%), tripalmitin, tristearin, also various other glycerides. Any poor odour characteristics is likely caused by the tripalmitin.

The African Pharmacopoeia indicated that dry copra (coconut meat) contains 6.3% protein, 57.3% fat (oil), 38% carbohydrates, and 2% minerals. It also contains 14.33% sucrose, 2.42% raffinose, 2.42% galactose, 2.40% pentose, 1.20% fructose, 1.19% glucose, 0.58% dextrin, and 0.87% starch.

In addition to the other uses mentioned, it is also used in the manufacture of edible fats, chocolate, in hair dressing and in massage²⁵.

All parts of the plant are useful in Africa. The oil is used for cosmetics and food. The coconut milk is a refreshing drink, and is main use as a poison antidote. It is not usually recommended for those with cardiac problems. The oil from the nuts is valued as an emollient and used as an ingredient in remedies for skin infections²⁶.

The oil, kernels, seed, leaves, sap are nutritive and anthelmintic²⁷. Coconut oil has the known effects of shrinking tissue, preventing the secretion of fluids²⁸. The root is diuretic, and the old and dried kernels are cut into slices and used in aphrodisiac preparations. The oil from the terminal bud can be used as a substitute for cod liver oil⁵.

The CTFIA Ingredient handbook recognises the oil as an occlusive skin conditioning agent, a solvent and hair conditioning agent²⁹. If the oil is massaged into the scalp daily it will cause thin hair to thicken and take on a pleasing lustre³⁰.

In India and Indonesia it is also used extensively to relieve toothache and as an anthelmintic (portions of the plant are astringent, especially the roots, and this may be the basis for which it is used as an anthelmintic)³¹.

Phenols obtained from the nut shell possess significant antifungal activity at 100 µg/ml against three *Microsporum* and four *Trichophyton* species, as well as antitubercular activity. The fresh coconut milk has been found to interfere with the absorption of some orally administered drugs and to exhibit moderate antihistamine effect.

2. HAIR TREATMENTS

It is hoped that it has been illustrated that not only the oil brings benefit, but that the whole plant has a contribution to make in one way or another.

In the next section we will examine those materials that are used on the hair by the various populations across the African continent, and attempt to split them according to whether they are used to colour, condition or stimulate growth in the hair. As there are over 400 hundred potential plants that come into this category, a degree of selection will be necessary.

2.1. HAIR GROWTH STIMULANTS

There are numerous plants that are said to stimulate hair growth, and these are a small selection.

Asparagus africanus leaves are used by the women in South Africa in an ointment³². In China another species, *Asparagus officinale* or Garden asparagus is used³³.

Eclipta prostrata [Syn. *Eclipta alba* Hassk.] or False Daisy is used in Egypt as the fresh juice of the plant and applied directly to the scalp. Taken internally, it is believed to blacken the hair and beard³⁴.

Lawsonia alba or Henna is normally associated with the colouring of the hair to a beautifully rich auburn colour, however, it has also been cited as a growth accelerator and was used in an ancient Egyptian formula to cure the loss of hair³⁵. A number of other data sheets support the use of henna for its hair stimulating properties^{36,37}.

Persea americana or Avocado pulp has been used directly on the hair to stimulate hair growth^{38,39}. The oil of this plant is also used to soften the skin and give it more resilience and smoothness, as well as being used on the hair and scalp¹⁷ for similar purposes.

Chinchona succiruba Pav. ex Klotsch, Red Chinchona or China Bark is also cited⁴⁰ as a hair growth stimulant.

Zingiber officinale or ginger is more usually used as a rubefacient on the skin for the treatment of rheumatism or for the treatment of sore throats and digestive problems. However, there are also reference to the use of rhizome in cases of hair loss⁴¹.

Aloe vera L. [Syn. *Aloe barbadensis* Miller] is most often encountered for its treatment of burns, however, a number of useful hair care references exist. It was probably Dioscorides (in about AD 74), who made the observation that aloe vera could stop hair loss, though it is not recorded whether this was the exudate, the gel or the whole leaf. Another reference cites aloe vera for the treatment of brittle hair⁴², though the author has found no other evidence to substantiate this claim. Another reference makes reference to the use of the gel for hair loss and for the improvement in hair growth following alopecia^{43,44}. In another reference⁴⁵, we learn that aloe gel has been massaged into the scalp and hair as a conditioner and at the same time used to stimulate hair growth. Grindlay and Reynolds⁴⁶ also report that in addition to the gel being used for hair loss, that the gel also had beneficial effect in the hair regrowth following a case of severe

roentgen dermatitis⁴⁷. Their paper contains a number of other useful references. Other treatments of post-traumatic experiences are also reported^{48, 49} where hair growth was improved or restored. It is always rewarding to find modern clinical studies that back up traditional plant usage.

Salvia officinalis or common sage has been used with rosemary to maintain the sheen of the African dark, curly hair and to strengthen and stimulate further hair growth⁵⁰. It is also reported to have similar properties when used alone⁵¹.

Curcuma longa or turmeric has been used to suppress the growth of hair⁵², though this is mainly a customary use in India⁵³.

Another plant that has been used to stimulate hair growth is *Vanilla griffithii*, where the irritating juice from the leaves is rubbed into the hair³², though care is recommended, since there is a reported case of allergic contact dermatitis in a hair tonic.

2.2. HAIR CONDITIONERS

Some of the plants used to condition the hair are amongst the number already discussed above. The most commonly used materials are the oily constituents of plants, which add sheen and lustre to the hair in the form of pomades and hair oils.

In certain countries the appearance of 'razor bumps' or *Pseudofolliculitis barbae* results from in-growing hair and is particularly prevalent in the beard⁵⁴. Gotu Kola or *Centella asiatica* has been used in a lubricant to correct this condition⁵⁵. It has also been used to condition the hair, since the flavonoids may also be used to effect in hair care products, where stimulation of the peripheral circulation of the scalp will promote healthy scalp condition and prevent hair loss^{56,57}. The uses of Gotu Kola in skin care are also extensive⁵⁸.

In reality, nature contains few truly hair substantive materials, since the binding to hair would require quaternary type molecules, which are not found in plants.

There are a large number of materials that naturally occur in Africa, but which are promoted by raw material suppliers, these would include *Ginkgo biloba* or Maiden Hair Tree, which is cited for normal and greasy hair products⁵⁹ such as shampoos and hair conditioners. Also *Actinidia chinensis* or kiwi fruit, which is recommended for normal and dry hair⁶⁰. Another common African plant is *Hibiscus rosa-sinensis* or Syrian Mallow, where the leaves (*Hibiscus sabdariffa*) are used as a topical emollient in that continent⁶¹, but in India the flowers and leaves are used in infusion as a hair stimulant and the juice of the flowers mixed with oil to be used as a conditioner and dandruff remedy⁵⁶.

2.3. HAIR DANDRUFF TREATMENTS

It might be that the treatment of dandruff is not seen as a major problem or condition for the African continent, since there are surprisingly few botanical materials cited in the literature.

One of the few references (not given by a raw material supplier) was for *Ricinus communis* or castor oil, which has been used as a hairwash for dandruff⁶². Though how this would work in practice is not worthy of contemplation! Another reference cites Mallow or *Malva sylvestris*, for dandruff or itchy scalp⁶³, though the use of a wash made from the roots or the leaves seems to be a European one, despite the plant being found in North Africa.

3. SKIN TREATMENTS

The use of plants as simple emollients for dry skin conditions is widespread in Africa, and there are many oils (some of which have already been mentioned), but there are also a number of butters. The African skin is really spectacular, especially when it has been massaged with oil, but left to dry it becomes dull and 'grey', a condition that is not liked.

3.1. DRY SKIN TREATMENT

Shea butter or *Butyrospermum parkii* is an excellent treatment for dry skin and has been used in Africa for centuries to protect their skin⁶⁴. This material has good skin penetrating properties and is used in the treatment of cracked and dry skin conditions. It has also been reported that an ointment base containing 75% shea butter released active ingredients (in the case cited it was specifically salicylic acid and benzoic acid) at a faster rate than white soft paraffin BP or simple ointment BP⁶⁵.

Cocoa butter or *Theobroma cacao* is also said to be beneficial to the skin and particularly soothing after windburn or sunburn. It is used medicinally in suppositories and pessaries⁶⁶. It is mainly produced in West Africa (particularly in Ivory Coast and Ghana) and the generic name means 'food of the Gods'⁶⁷. Cocoa contains the alkaloids theobromine (0.5 to 2.7%) caffeine (about 0.25% in cocoa), trigonelline and others. Cocoa butter contains triglycerides consisting mainly of oleic, stearic and palmitic acids. About three quarters of the fats are present as monounsaturates. Cocoa butter is used widely as an emollient and as an ingredient in various topical cosmetic preparations. Cocoa butter has been reported to be a source of natural antioxidants⁶⁸.

Another butter with similar properties to Cocoa butter is Illipe butter or *Shorea stenoptera*.

3.2. ECZEMA SKIN TREATMENT

The African continent is a rich source of plants used for treating eczema and a few examples will be discussed.

Lactuca capensis is used in the Congo as the powdered or pulped root, which is applied to the skin.

The juice from the aerial parts of *Borreria verticillata* is used on the west coast of Africa to treat skin diseases and is also used against eczema. Another species *B. compacta* is used similarly in southern Africa. *B. natalensis* is used by the Zulus for the treatment of leprosy and furuncles.

A plant that is not suitable for use in cosmetics and toiletries is the Physic Nut or *Jatropha curcas* L., however, the oil from the plant is a powerful remedy for skin diseases and will also soothe pain such as that caused by rheumatism⁶⁹. The sap of the plant is used to stop the bleeding of wounds, and the latex contains a proteolytic enzyme called curcain which has demonstrated wound healing properties⁷⁰.

The plant is also used for dental problems, the juice from the stems and twigs is used for swollen and bleeding gums, the sap for relieving toothache and correcting tooth cavities. Additionally, the crushed seeds are fermented with grain cereals as a poultice for relieving itch, for treating parasitic and fungal skin diseases, while the roasted seeds are ground into a powder and used to treat erysipelas and the seed oil used for external tumors⁷¹. The oil of the seeds is used in West Africa as a remedy for sciatica, paralysis, and numerous other skin diseases, e.g. measles, mumps and chickenpox⁷².

The root of *Jatropha zeyheri* is powdered raw and used externally by the Xhosa people for boils and for the fast healing of open wounds⁷³.

We have already mentioned turmeric briefly, but this herb is an important eczema remedy and should be included again here.

It has many vernacular names: Acafrao, Arqussofar, Asabi-E-Safr, Cago Rerega, Chiang-huang, Common Tumeric, Curcum, Curcuma, Curcuma tintoria, Dilau, Dilaw, Gelbwurzel, Gezo, Goeratji, Gurgemeie, Haladi, Haldi, Haldu, Kaka, Kaku Halu, Hardi, Haridra, Huang Chiang, Hsanwen, Huang Si Yujin, Hurid, Indian Saffron, Jianghuang, Kakoenji, Kalo Haledo, Khaminchan, Lilunga Kuku. Kitambwe, Kiko Eka, Koening, Koenir, Koenjet, Kondin, Kooneit, Kunyit, Kurkum, Kurkuma Gelbwurzel, Luyang Dilaw, Mandano, Manjano, Manjal, Nghe, Nisha, Oendre, Pasupu, Radix Curcumae, Rajani, Rame, Renga, Saffran Vert, Safran des Indes, Skyer-rtsa, Temoe Lawak, Temu Kunyit, Tumeric, Tumeric root, Tumeric rhizome, Turmeric, Ukon, Ul Gum, Wonk Keong, Wong Keung, Yellow Root, Yii-chin, Zafferano delle Indie, Zardchob.

There are a number of varieties, but the most important is Curcumin or Turmeric, the processed rhizome of *Curcuma longa* L. (Zingiberaceae). [Syn. *Amomum curcuma* Jacq., *Curcuma domestica* Valetton., *Curcuma domestica* Lour., *C. xanthorrhiza* Naves]

The key properties are reported as wound healing - turmeric powder applied externally to septic and aseptic wounds accelerated the healing process. Hepatoprotectant activity, antibacterial and antifungal activity were also reported. In addition, the drug has been attributed with antitumour, antifertility, anticoagulant, and hypertensive activities⁷⁴.

In Northern India the rhizome is used by many natives for treating cuts, burns and scalds⁷⁵, while the natives in Samoa use the powdered rhizome to sprinkle on newborn infants to help heal a recently cut umbilical cord, to prevent nappy rash from occurring, and to keep the skin continually soft and resilient. The powder is also used as a paste or poultice to treat skin ulcers and to help heal extensive skin eruptions⁷⁶. In parts of Africa, turmeric has been successfully tested for healing rashes due to allergies, psoriasis inflammation and itching accompanying arthritis⁷⁷.

3.3. PSORIASIS SKIN TREATMENT

Anogeissus leiocarpus, [Syn. *Anogeissus schimperi*, or *Conocarpus leiocarpus*] is used externally as a decoction of the leaves in Nigeria for washing in the treatment of skin diseases and the itch of psoriasis. The powdered bark is applied to wounds, sores, boils, cysts, and diabetic ulcers with good results. The powdered bark has also been mixed with green clay and applied as an unusual face mask for serious acne vulgaris and blackhead with good results⁷².

Dog almond, worm bark or *Andira inermis* (Wright) DC. is also used to treat psoriasis and ringworm of the scalp. The bark is, however, a dangerous poison in large doses, causing vomiting with drastic purgation, delirium and narcosis. Alkaloids present are berberine, and angeline or andirine or geoffroyine which is N-methyl-tyrosine². A related species *Andira araroba* contains chrysarobin⁷⁸ (this appears in the 1932 edition of the British Pharmacopoeia, but has disappeared by 1988). It also has uses in draughts and washes against leprosy, and in small quantity as a cicatrisant. Bark, and leaves, are put into baths for general fatigue and stiffness. The stem-bark contains a resin and is applied to areas of puffiness caused by erysipelas⁷⁹.

Ammi visnaga is renowned for the medicinal use of its fruits. The true Ammi, also called Bishopsweed or Khella, was used as medicinal plant by the ancient Egyptians (where it is mentioned in the Eber's papyrus 1550 BC) because of its diuretic and spasmolytic properties.

A register of medicinal plants drawn up for the World Health Organisation (Penso 1982), recognises *Ammi visnaga* as an official plant in various central and eastern European states, east and southeast Asia, North Africa and South America.

Extracts of the plant have been used to treat psoriasis, where khellin is the major component responsible for the beneficial action^{80, 81}. An extract of *Ammi majus*, a close relative of *Ammi visnaga*, is recommended for the treatment of vitiligo or piebald skin.

The "Egyptian" method of vitiligo therapy consists of giving powdered Ammi majus seeds internally, 4-6g daily. At the same time, a tincture or the extract of the drug is painted on locally, after which the discoloured skin areas are treated with ultraviolet light or exposed to the sun, for not more than half an hour. This is said to give remarkable results, with pigmentation restored⁸². Meladinine (a commercially derived drug) is now also used to enhance the effect of UV therapy in psoriasis⁸³.

3.3. ACNE, SPOTS AND PIMPLES SKIN TREATMENT

As might be expected, this is a very important area that can only be covered with a few examples, since there are dozens of useful plants, which could be represented.

Plumbago zeylanica or Ceylon leadwort is a plant is extremely popular throughout Africa and Asia as a remedy for parasitic skin diseases, especially leprosy, scabies, acne vulgaris, sores and leg ulcers⁸⁴.

The root contains plumbagin, a yellow naphthoquinone, which is responsible for its antimicrobial and antibiotic activity⁸⁵. A very dilute solution (i.e. a concentration of 1:50,000) of plumbagin is lethal to a wide spectrum of bacteria and to pathogenic fungi⁸⁶. The external use of the root in treating skin infections is justified⁸⁷. Intravenous injections in patients with boils, anthrax or cystitis were well tolerated and brought about rapid recovery^{88,89}. An interesting confirmation of the plants benefit is found in Tibet, where *Plumbago zeylanica* (*Tzee-trah-kah*) is used to destroy tumours, reduce piles and for other foreign organisms⁹⁰.

Artemisia absinthium, Absinthe or Wormwood contains an essential oil; also thujone (absinthol), thujol, thujyl alcohol, proazulene, artabsin, isovaleric acid and other compounds. In addition, the green parts contain a bitter glycoside, absinthiine (a sesquiterpene lactone)^{91,92}. The toxic affects of wormwood are similar to those of tansy (another member of the Compositae family), although absinthe is reputed to have beneficial bitter tonic properties and has traditionally been used as a remedy for epilepsy⁹³.

The Negritos of the Philippines use *Artemisia vulgaris* or *Artemisia absinthium* in fomentations for skin diseases and ulcerative sores. The entire plant is often made into a decoction and used as a wash for all sorts of wounds and skin ulcers. The dried leaves cut into small fragments are used to help induce more rapid scarring of unhealed wounds. The leaves are used in eczema, herpes and purulent scabies¹⁹.

Artemisia herba-alba is extremely popular throughout much of North Africa, being used for a variety of skin problems. The dried powdered plant material is used for healing wounds and burns; the boiled flowers are made into a cataplasm for bringing abscesses to a head and helping them to heal. It has also been used in powdered form to stop excessive bleeding, and used as a poultice in cases of herpes lesions, acne vulgaris, and carbuncles⁹⁴.

Artemisia afra is also popular for skin ailments. An infusion or decoction is used as a lotion by natives in South Africa to bathe haemorrhoids, herpes and venereal sores, while a hot bath in the decoction is used to bring out the rash in measles, mumps and chickenpox. The plant is also held in the mouth to ease the pain of boils and to hasten their bursting. It also has similar uses to *Artemisia herba-alba* as described above and used externally on boils, carbuncles, and large acne pimples. A poultice of the leaf is applied locally to relieve neuralgia, to the swellings in mumps, and to any glandular or skin inflammation. A lotion is also made from the plant for washing the body and rejuvenating the skin¹⁷.

4. CONCLUSIONS

Wherever possible the selection of plant materials has been restricted to those materials where strong ethnobotanical use has been reported. In many cases the data released by raw material suppliers is uncited and often very difficult to substantiate from official (i.e. ethnopharmaceutical, pharmacognocny or phytotherapeutical) texts, perhaps this is an area where those commercial sources could be more proactive.

The two articles in this series have covered a rapid tour of the African continent and we have seen in many of the references, that one cannot restrict the cosmetic and medicinal uses to any one continent. Word of a plant's beneficial properties seems to spread rapidly to neighbouring countries and knows no boundaries. In the next article we shall be looking at the American continent, and will examine whether the transfer of knowledge is quite so significant when those land masses are not connected.

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