Essential News

Essential Therapeutics
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Greetings.

In this issue we discuss:
- The unique essential oil of Spikenard. Little known in the practice of either Aromatherapy or western Herbal Medicine, Spikenard has an ancient history of therapeutic use in the Indian Ayurvedic tradition and in Nepal. We even find the use of Spikenard as an expensive unguent in the Christian Bible. Modern research is now bringing more light to some of Spikenards' therapeutic possibilities.

- *Real Rejuvenation – the Role of Essential Fatty Acids.* 'Essential Fatty Acid' vegetable oils include oils such as Rose Hip, Hemp Seed and Evening Primrose. We will see that not only are 'essential fatty acids' absolutely necessary in our diets, but they have great regenerative benefits when used in natural skin care products and therapeutic formulae.

Wishing you all a happy and healthy holiday season.

Best Regards,

Ron Guba, Editor

Spikenard

Common Name: Spikenard, Indian Spikenard, Jatamansi
Botanical Name: *Nardostachys jatamansi* DC syn. *N. grandiflora)*
Family: Valerianacae
Plant Part: Rhizomes
Extraction: Steam distillation
Country of origin: Nepal
Guarantee: Wild-harvested
Aroma: Warm-spicy, rooty, woody, with pine notes

Origin:

Spikenard is a member of the Valerian family and grows wild in northern India and Nepal. Spikenard is commonly distributed in an elevation range of 3500m to 4500m in the northern aspect of the sub-alpine and alpine pastureland of the Himalayas in Nepal. Though found in eastern to western region of the country, Jatamansi is more abundant in the western regions. The plant is mostly found growing in steep areas with a 25 °-45° slope. It grows well on open, stony and grassy slopes, and on the turf of glacial flats. It is also found growing under the silver birch forest, where its growth is good with large leaves and long rootstock.

N. jatamansi is an erect perennial herb, with a long, stout and woody rootstock. The plant part used consists of short, thick, dark grey rhizomes crowned with reddish brown tufted fibrous remains of the petioles of the radical leaves.

The dried rhizomes are steam-distilled to yield between 1 - 2% of essential oil. Spikenard oil of good quality has a greenish color and an odour suggestive of patchouli and Indian valerian (*Valeriana officinalis* L.), which has a sweet, woody, and spicy animal odor. The oil resinifies on exposure to air. The volatile oil cells are generally located on the fine fibrous hairs of the rhizome.

History:

The famous aromatic root, nard, was known in ancient times as an ingredient in ointments, and is believed to be the same as the Indian nardostachys, *N. jatamansi,* also known as *Nardostachys grandiflora.* There is also a *Valeriana jatamansi* that is similar to nardostachys and sometimes used as a substitute. The species name jatamansi is adopted directly from the original Sanskrit name of the herb.

Unlike valerian, which has an odour that is often described as unpleasant (sometimes likened to dirty socks), the nardostachys fragrance is considered attractive and similar to expensive musk. The oil is used in perfumery, such as in Oriental and heavy floral fragrances. It blends well with Cedarwood and Lavender.

In India, it is used in making many massage oils, in incense and is said to be useful for many diseases, especially beneficial as a sedative for nervous and spasmodic symptoms (such as heart palpitations, headache, shaking, and convulsions) and to treat disorders of the digestive and respiratory systems.

Further uses in the Indian Ayurvedic tradition: Spikenard has from a very remote period been in use among the Indians as a perfume and medicine. It is mentioned by Susruta in a prescription for epilepsy and is prescribed by Indian physicians as a nervine tonic and carminative and aromatic adjunct in the preparation of medicinal oils and ghees (herbs infused into clarified butter).

In Pakistan it is included in several remedies for hemiplegia, Bell's palsy, and Parkinson's disease.

This herb is likely to have been adopted into the Chinese tradition from India, with plants growing in the Western Chinese provinces of Yunnan and Sichuan (in the mountain regions), being the same species as the Indian variety.

The active constituents of Spikenard are similar to those found in Valerian. In India, modern research with the herb has been aimed at examining new uses rather than the traditional ones: it is being examined for its liver protective effects, ability to increase nerve growth factor, and lipid lowering effects. In Germany and Japan, some interest in this herb as an alternative to Valerian has been shown, in that preliminary experiments in laboratory animals show that it has an even lower toxicity than Valerian (which already has very low toxicity).

In China, *Nardostachys sinensis*, as well as *N. jatamansi*, is widely used as an analgesic herb. Presumably, the fresh herb was used in folk medicine, and it is the dried herb (Chinese name is gansongxiang) that is incorporated into the Materia Medica as an item found in herb markets. According to the Oriental Materia Medica it is traditionally used for treating pain in the chest and abdomen that results from *Qi* stagnation associated with internal cold. The herb is considered warming and regulates *Qi*, having a quality similar to some other fragrant herbs, such as cyperus (xiangfu), saussurea (muxiang), sandalwood (tanxiang), and aquilaria (chenxiang), which have similar applications in treating pain.

The nard of Biblical times was a costly aromatic ointment, preserved in alabaster boxes. In the New Testament of the Bible, it is said that Mary Magdelene used an entire years' income to purchase a small quantity of Spikenard for Jesus. Made into an 'anointing oil', Mary massaged this into the feet of Jesus of Nazareth and anointed his head with it at the Last Supper.

Principal Constituents	**as determined by GC/MS analysis**
C_{15} terpenes	Seychellene (4.2%), aristolene (1.5-5.4%), B-gurjenene (>5%)
C_{15} alcohols	Patchouli alcohol (<2.5%), spathulenol (<2.4%), maaliol (2%)
Aldehydes	Viridifloral (1.4%)
Ketones C_{15}	Valeranone (or jatamansone – 6.9%), aristolone (1.6%), aristo-1(10), gamma-dione Less than 1% of B-E-ionone, globulol, 7-epi-delta-selinene

Optical Rotation: Too dark in colour **Refractive Index:** 1.500 to 1.520 **Specific Gravity:** 0.959 to 1.015

Quality Issues: Spikenard oil can be extended with substances such as patchouli oil, eugenol, borneol, isobornyl valerianate and on. Proper analysis is necessary.

Reported Properties	**and Therapeutic Indications:**
Anti-inflammatory, regenerating, 'benefits the skin' in general, 'anti-aging'	An excellent oil for the skin – Spikenard has been used in incurable skin conditions , such as scleroderma, also with psoriasis. Also for skin allergies and inflammations (allergic dermatitis, excema), wound healing, rejuvenating –for mature skin, wrinkles, etc. Reported to promote hair growth and darken colour.
Calming, sedative, 'balancing and grounding'	Used traditionally for it's sedative properties; seen to increase awareness, as opposed to the sometimes dulling effects of Valerian. Harmonises sympathetic/parasympathetic nervous system. Conditions include: insomnia, nervous indigestion, stress, restlessness, anxiety, tension headaches, menopausal emotional disturbances. Convulsive disorders – epilepsy, high fevers and hysteria. Heart palpitations. Case histories document its use in lowering high blood pressure.
Emmenagogue, calming, anti-spasmodic	Regulates hormonal balance in menstruation; useful for dysmenorrhoea (painful periods).
Healing, astringent, balances circulation, anti-arrhythmic	Balances venous and arterial circulation (especially heart & lungs)– useful in varicose veins, haemorrhoids, fluid retention. Regulates heartbeat – useful for heart palpitations and cardiac pain of nervous origin; it can raise low blood pressure.
Anti-spasmodic, calming	Digestive problems – indigestion, cramps, colic, constipation. Has been used for treatment of thread worm infestation.
Hepato-protective	Recent studies suggest Spikenard has useful liver protectant properties (as in the case of St. Mary's Thistle), to protect against toxic compounds, use in hepatitis, etc.
"Balancing, grounding, opening"	On the energetic level, Spikenard is said to inspire devotion, generosity and inner peace; aids in balancing emotional/spiritual/physical 'bodies'.

Herbal Energetics:

Overall, Spikenard is a deeply relaxing, antispasmodic, balancing and grounding essential oil. Most or all of the activity of the herb can be ascribed to the essential oil content.

One anecdotal case history from an Indian medical clinic: "One of our patients used Spikenard oil when her husband, suffering from high blood pressure, collapsed at home. She could not feel his pulse and he became unconscious. Waiting for the ambulance, she tried to think how to help her husband. In a trauma of the circumstance, she ran to the bathroom cabinet and took the Spikenard oil. She started to massage her husband and let him smell the oil on a tissue. When the ambulance arrived, her husband was sitting on the carpet propped up comfortably against the wall. He later fully recovered in hospital. This anecdotal evidence is well documented on our patient's file." Reported in *White Lotus Aromatics Newsletter,* April 18th, 2001

Mind and emotions:

Spikenard is an excellent oil for calming the nerves and an out-of-balance mind. It is quite grounding in nature, helpful to root people and establish a sense of control in their lives. It is said to bring courage and power to individuals.

Chakra Affinity: Heart and Crown

Safety Issues:

With a long history of use, Spikenard is considered to be even less toxic than Valerian oil (which is already very non-toxic). It is seen to be non-irritant and non-sensitising as well.

Large oral doses are said to have a distinct depressant action on the central nervous system. There are no reports as to what a truly large dose might be, but given its low toxicity, it would be much greater than typical oral doses. One study demonstrated a LD_{50} value (what is known as the median lethal dose) of over 3 grams per kilogram in laboratory mice. That would represent about a 200mL dose for an average adult!

Potential Toxicity: Rating 3 A very safe essential oil for general use.

Real Rejuvenation – the Role of Essential Fatty Acids

What are Fats and Oils?

All animal fats and vegetable oils primarily consist of *triglycerides.* A triglyceride consists of three *fatty acids* combined with one molecule of *glycerine.* The major difference between animal fats and various vegetable oils are the type of fatty acids found in the oil.

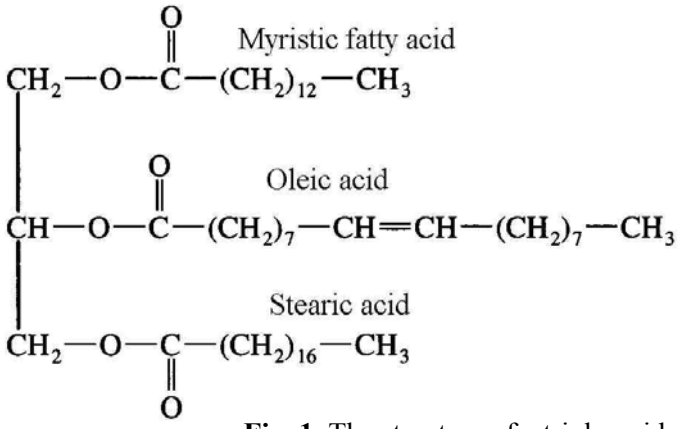


Fig. 1 The structure of a triglyceride

Types of Fatty Acids

There are a variety of fatty acids found in oils and fats. In brief:

- fatty acids are practically all straight-chain carboxylic acids (that is, a straight chain of carbon and hydrogen atoms with an acid COOH group at one end)
- they range in size from 4 to 22 carbon atoms in length.

There are three classes of fatty acids: saturated, monounsaturated and polyunsaturated.

- saturated fatty acids have no *double bonds* between adjacent carbon atoms – they are *saturated* with hydrogen atoms. These fatty acids are most common in hard animal fats and vegetable fats such as cocoa butter.
- Monounsaturates have one (mono) double bond.
- Polyunsaturates have two or more (poly) double bonds between carbon atoms.

Mono- and polyunsaturated fatty acids make up the highest proportion of liquid vegetable oils. We will focus on the benefits of polyunsaturates in this article.

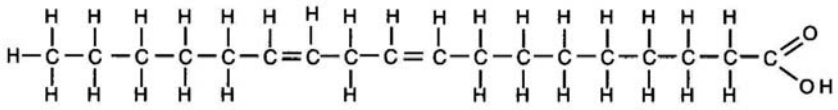


Fig. 2 Linoleic acid – a polyunsaturated fatty acid with two double bonds

Essential Fatty Acids

Two polyunsaturated fatty acids are also known as **essential fatty acids.** As the name suggests, these fatty acids, alpha-linolenic (LNA - an omega 3 fatty acid) and linoleic (LA - an omega 6 fatty acid) are *essential* for our well being. They must be included in our diet, as our bodies cannot manufacture these compounds, as with Vitamin C. In fact, these fatty acids are sometimes referred to as 'Vitamin F'.

Deficiencies of these two fatty acids in our diet have been linked with a variety of problems:

Symptoms of linolenic acid (LA) deficiency:

eczema-like skin eruptions * loss of hair * excessive water loss through the skin * failure of wound healing * drying up of sebaceous glands * liver degeneration * behavioural disturbances * kidney degeneration * susceptibility to infections * sterility in males miscarriage in females * arthritis-like conditions * heart and circulatory problems * growth retardation * prolonged absence of LA from the diet is fatal.

Symptoms of alpha-linolenic acid (LNA) deficiency:

tissue inflammation * oedema or fluid retention * dry skin * poor wound healing growth retardation * weakness * impairment of vision and learning ability * motor incoordination * tingling sensations in arms and legs * behavioural changes

Other symptoms that can result from LNA (or w3) deficiency include:
high blood triglycerides * high blood pressure * sticky platelets * mental deterioration
low metabolic rate * some kinds of immune dysfunction.
These are not considered 'classic' symptoms of LNA deficiency, but often respond remarkably well to LNA supplementation.

The above problems relate to the lack of these fatty acids (and related fatty acids) in our diets. A diet rich in fruit, vegetables, nuts, seed, fish and specific unrefined vegetable oils will assure an appropriate intake.

Benefits for the Skin

We are discussing the benefits of essential fatty acids (EFA's) when applied topically to the skin. You will see above in **bold** the **skin problems** that can be caused by deficiencies of EFA's. Even a minor deficiency of essential fatty acids can cause the skin to become dry and leathery, easily bruise, and age much more rapidly. The hair usually lacks lustre and the nails become brittle. Essential fatty acid deficiencies are also linked to eczema. One factor in acne and blackheads in the over-ingestion of saturated animal fats and hydrogenated vegetable oils (margarine, etc.). Topical application of EFA's can help 'fluidify' sebaceous secretions, reduce inflammation and on. Such deficiencies can be remedied by adding more EFA containing oils to one's diet. As well, EFA oils work *topically*, as the cells of the epidermis take up and utilise EFA's directly. Hence, the topical use of essential fatty acid oils is an excellent, effective way to serve and maintain a healthy, radiant skin.

Essential Fatty Acid containing Oils include:

Rose Hip Oil (*Rosa rubiginosa*)

Originating from Chile from a species of wild rose, this particular oil has been researched and used in clinical practice in topical applications with remarkable results by Chilean dermatologists. Rose Hip oil contains a high content of essential fatty acids, with 30% to 40% alpha-linolenic acid and 40% to 48% linoleic acid. Contrary to some marketing statements made by companies promoting Rose Hip oil products, the oil does not contain any Vitamin C. Vitamin C is a water-soluble

vitamin found in the seeds, but does not end up in the extracted oil.
Skin conditions and disorders that have been reported to respond well to Rose Hip oil applications include:

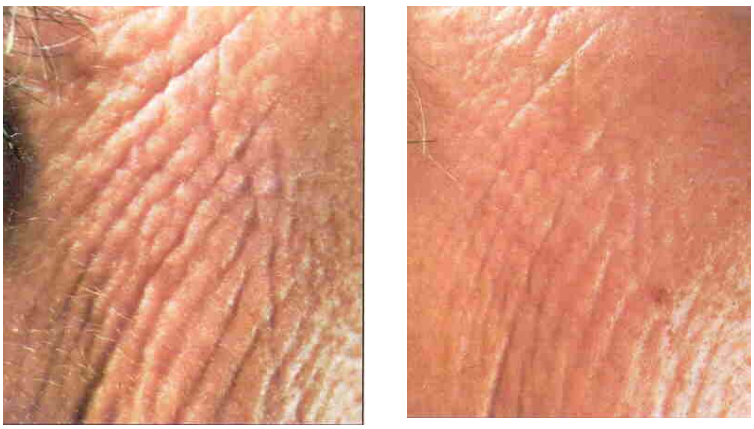
Acne * eczema * dry or dull skin * seborrheic dermatitis * over pigmented skin dry, damaged or permed hair

A variety of conditions that relate to the increase of regeneration of the germinative cells of the epidermis:

Cracked or fissured skin, aging or sun damaged skin * scar reduction (both preventative and curative), resulting from surgery, burns, wounds, and stretch marks * slow healing wounds, including: venous ulcers and pressure sores (decubitis ulcers)

Fig. 3 On left, a 33-yr old woman with raised, hypertrophic scars resulting from an automobile accident. On the right, the excellent results after four months of Rose Hip oil application.

Fig. 4 On left, a close-up of a 62 -yr old woman's facial skin, showing wrinkling due to UV exposure and 'cross-linked' collagen. The same area of skin after three months of application of Rose Hip oil, showing a definite reduction in wrinkle depth and a smoother skin appearance.



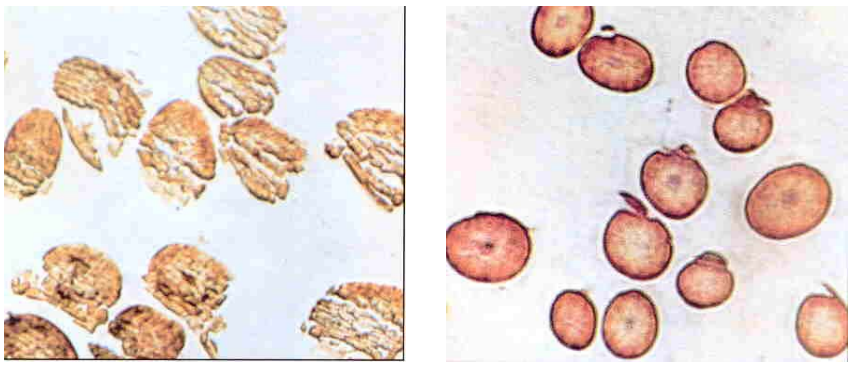


Fig. 5 On left, a micrograph of damaged hair, showing damage to both the cuticle and medulla of the hair shaft. On the right, 24 hours after application of Rose Hip oil, the cuticle is repaired and the medulla of the hair shaft can be recognised.

Other Essential Fatty Acid Oils

There are various other vegetable oils with a high content of essential fatty acids. Their benefits via topical application to the skin is not as well researched as Rose Hip, but given their similar composition and the anecdotal results reported, these oils can be used for the same purposes.

Such oils include Flaxseed, Kukui Nut and Sea Buckthorn. Vegetable oils that are rich in essential fatty acids and the rare gamma-linolenic acid include the oils of Hemp Seed, Evening Primrose and Borage.

Gamma-linolenic acid

A few vegetable oils contain the rare fatty acid, *gamma*-linolenic acid or GLA. GLA is not a primary essential fatty acid, but what is known as an EFA derivative. In our bodies, linoleic acid is first transformed to gamma-linolenic acid. GLA is further transformed to produce both series 1 and 2 prostaglandins (PGE_1 and PGE_2).

Prostaglandins are short-lived, hormone-like chemicals produced by the cells of our body. There are three families – series 1, 2 and 3. All are necessary, but it is said that series 1 and 2 are the 'good guys' (we definitely want enough of these produced) and series 3 are the 'bad guys' (we don't want over-production). Series 1 prostaglandins inhibit platelet aggregation (preventing blood clots as in heart attacks), lowers blood pressure by relaxing blood vessels and reduces inflammation as prime examples.

Both series 1 and 3 prostaglandins are produced from essential fatty acids, whereas series 2 are either produced from linoleic acid (transformed to arachidonic acid) or animal products (meat, eggs and dairy) which contain arachidonic acid.

Further, if we have a balanced intake of both essential fatty acids in our diet, series 1 prostaglandins and eicosapentaenoic acid (made from alpha-linolenic acid) moderates the conversion of arachidonic acid to series 2 prostaglandins and to leukotrienes (immune system compounds that mediate inflammation and muscle contractions, as in asthma). In brief, we certainly do best by having a good intake and balance of essential fatty acids in our diets, as compared to excessive amounts of animal products, 'transformed' fats such as margarine and on.

However, due to poor diet or various disease conditions, the proper conversion of linoleic acid to gamma-linolenic acid and beyond can be inhibited. In these cases, the addition of GLA and certain fish oils (rich in eicosapentaenoic acid or EPA, a further transformation product) can help bypass this faulty step of transformation. Various nutrients, especially Vitamin B_6 (pyridoxine) serve this transformation process.

Most studies have dealt with the benefits of ingesting GLA-rich vegetable oils, as compared to topical application. Nevertheless, based on present knowledge and the wealth of anecdotal reports, such oils do appear to have real benefits for the skin when topically applied. As well, all of these GLA oils contain high amounts of the primary essential fatty acids.

Gamma-linolenic containing vegetable oils include:

Evening Primrose oil, with it's 7% to 15% concentration of gamma-linolenic acid (plus a high percentage of linoleic acid) has been researched and found to be of possible use in a wide variety of conditions, including pre-menstrual syndrome, heart and vascular disease, eczema, rheumatoid arthritis, multiple sclerosis, and more.

Borage oil is quite similar to Evening Primrose, with an even higher content of GLA – as high as 24%

Hemp Seed oil is very well balanced EFA vegetable oil, with up to 86% content of essential fatty acids, including from 2% to 5% of gamma-linolenic acid. Hemp Seed oil is considered to be the most balanced of vegetable oils, with the most beneficial ratio of 3 parts linoleic acid to 1 part alpha-linolenic acid.

Profiles of major Essential Fatty Acid oils - % of total major fatty acids

	Palmitic (C16:0)	Stearic (C18:0)	Oleic (C18:1w9)	Linoleic (C18:2w6)	*Alpha*-linolenic (C18:3w3)	*Gamma*-linolenic (C18:3w6)
Hemp	6-9	2-3	10-16	50-70	15-25	1-6
Evening	4-12	1-7.5	4-12	65-72	0	7-15
Primrose	6-7	1-2	9-11	45-60	12-15	15-19
Black Currant	~11	~ 4	15-17	35-37	<1	18-24
Borage	0	2	~ 15	40-48	30-40	0
Rose Hip	5	4	19	14	58	0
Flax						

To be continued in the next issue…

Acknowledgements:

Spikenard illustration and overview from:

VALERIAN AND NARDOSTACHYS by Subhuti Dharmananda, Ph.D.
www.itmonline.org/arts/valerian.htm

Rose Hip oil photos, figures 3, 4 & 5 in *Real Rejuvenation* article from *Natural Organic Skin & Hair Care* Aubrey Hampton 1987 Organica Press Tampa, USA

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The Ultimate Practitioner Range

Essential Therapeutics Head Office
39 Melverton Drive Hallam VIC 3803 Australia
PH + 61 3 8795 7720 FAX + 61 3 8795 7375
EMAIL: **esstherapeutics@ozemail.com.au**