



ALL ABOUT NATURAL VEGETABLE BUTTERS!

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The number of natural butters continues to grow, and the importance of the wide variety offered is increasingly important. It is hoped that the popularity of these materials will spur the extraction of natural waxes which would be equally acceptable to the natural chemist who is limited by the current choices available. Information about butters is often very confused and this makes identification difficult.

The presence of numerous synonyms does not make the situation any easier. It is hoped that this review will help to simplify the identification and understanding of the butters named in the CTFA dictionary (and a few more besides).

Aesandra butyracea. [Syn. *Diploknema butyracea*, *Bassia butyracea*] Chiuri Tree, Chiuri butter, **Phulwara butter**. Nepal. Family: Sapotaceae. The main product of the tree is “ghee” or butter, extracted from the seeds and named Chiuri ghee or Phulwara butter. The seed produces an oil rich in fatty acids that is mainly used as vegetable butter. The vegetable butter is also used in lighting lamps, confectionery, pharmaceuticals, vegetable ghee production, candle manufacturing and soap making. Folklore: Chiuri has a very important cultural value in Nepal where the people of the Chepang community give Chiuri seedlings as dowries to daughters indicating its significance in the livelihood of the Chepang community. The juice is also consumed to quench thirst. It has been found to be effective for rheumatism.

Astrocaryum murumuru. **Murumuru butter** fixed oil. Family: Arecaceae. Traditional use: a very soft butter from the heart of the Brazilian rain forest. This butter is a substantive and protective material that makes a perfect, if not better, replacement for cocoa butter, illipe butter and others. Chemistry: Saponification value: 245. Iodine value: 25. Average carbon number: 13.89. Average molecular weight: 226.47. C8: 1%; C10: 0.9000%; C12:0: 44%; C14:0: 28%; C16:0: 9%; C18:0: 3%; C18:1: 10%; C18:2: 4%; C20:0: 0.1%.

Astrocaryum tucuma. **Tucuma butter**. Upper Amazon and Rio Negro. Family: Arecaceae. Traditional use: the fleshy part of the fruit is esteemed for food by the Indians. The yellowish, fibrous pulp is eaten. The large fruits are edible and valued for their flavour in South America. A light coloured butter is obtained from the seeds which has a unique, characteristic odour and behaviour similar to murumuru butter. The butter's natural gloss brings a desirable shine to dry, damaged hair and can act as a wonderful skin moisturiser, exhibiting great lubricity. Tucuma butter is solid at room temperature, but melts immediately on contact with the skin. Chemistry: Saponification value: 231.4. Iodine value: 12.5. Average carbon number: 13.49. Average molecular weight: 221.47. C8: 1.92%; C10: 1.95%; C12:0: 50.157%; C14:0: 24.44%; C16:0: 6.21%; C18:0: 2.33%; C18:1: 8.35%; C18:2: 4.16%; C20:0: 0.1%; C24:0 0.06%.

Bassia butyracea. [Syn: *Diploknema butyracea*] Family: Sapotaceae. **Indian butter**, Phoolwa-oil plant. It is a plant from the East Indies. The pulp of the fruit is edible. The juice is extracted from the flowers and made into sugar. It has the appearance of date sugar, to which it is equal if not superior in quality. An oil is extracted from the seeds, and the oil cake is eaten as also is the pure vegetable butter which is called chooris.

Bassia latifolia (2). **Mowrah butter fixed oil**. Melting point: 39°C. Saponification value: 291. Iodine value: 62. Average carbon number: 17.35. Average molecular weight: 276.3. C16:0: 23.5%; C18:0: 21%; C18:1: 38.5%; C18:2: 16%. Traditional use: [Syn. *Bassia longifolia*] The butter is extracted from the seed kernels and further processed and refined to obtain a yellowish butter which has a very mild odour. The butter is a solid at room temperature, but melts readily on contact with the skin. It will help prevent drying of the skin and so help reduce the formation of wrinkles. Helps soften and smooth the skin. Medicinally, Bassia oil is used as an emollient application to the skin.

Butyrospermum parkii (1). **Shea butter**. Saponification value: 180. Iodine value: 3. Average carbon number: 17.6. Average molecular weight: 278.1. C16:0: 20%; C18:0: 45%; C18:1: 33%; C18:2: 2%. Traditional use: This rich buttery oil from central Africa is used for the protection and care of skin cracked and dehydrated by the elements. Beurre de karite is an elegant addition to products crafted for the smoothing and replenishment of dry skin. Shea butter is a suitable base for topical medicines. Its application relieves rheumatic and joint pains and heals wounds, swellings, dermatitis, bruises and other skin problems. It is used traditionally to relieve inflammation of the nostrils. Shea butter has natural antioxidant properties and is said to contain a small quantity of allantoin which is renowned for its healing qualities. It is also said to protect the skin against external aggressions, and sun rays. It is an effective skin emollient and skin smoother. Folklore: in Africa, the fat (shea butter) is used as ointment for rheumatic pains and boils. A decoction from the bark is used to facilitate child delivery and ease labour pains. The leaf extract is dispensed for headaches and as an eye bath.

Butyrospermum parkii (2). **Karite butter**. Melting point: 38°C. Saponification value: 180. Iodine value: 65. Average carbon number: 18.42. Average molecular weight: 281.6. C16:0: 6%; C18:0: 40.5%; C18:1: 50.5%; C18:2: 6%. Traditional use: the high proportion of unsaponifiable matter, consisting of 60% to 70% triterpene alcohols, gives shea butter creams good penetrative properties that are particularly useful in cosmetics. Allantoin, another unsaponifiable compound, is responsible for an anti-inflammatory and healing effect on the skin.

Carpotroche brasiliensis. **Sapucainha butter**, Fruta-de-lepra. Family: Flacourtiaceae. Traditional uses: it is used to treat skin diseases and leprosy. Chemistry: Gynocardin and Tetraphyllin B were isolated from the seeds and pericarp. The cyanogenic glycosides occur in an approximately equimolar mixture in the seeds and in the pericarp. The oil extracted from its seeds also contains as major constituents the same cyclopentenyl fatty acids hydnocarpic (40.5%), chaulmoogric (14.0%) and gorlic (16.1%) acids found in the better known chaulmoogra oil prepared from the seeds of various species of *Hydnocarpus* spp. These acids are known to be related to the pharmacological activities of these plants and for their use as anti-leprotic agents.

Garcinia indica. **Kokum butter**. Melting point: 41°C. Saponification value: 190. Iodine value: 31. Average carbon number: 17.96. Average molecular weight: 283.1. C16:0: 2%; C18:0: 58%; C18:1: 39%; C18:2: 1%. Traditional use: Kokum butter is obtained from the fruit kernels of the tree, *Garcinia indica* growing in India. It is mainly used as a replacement for cocoa butter for which many consider kokum to be an equivalent or better. Traditional medicinal applications of kokum butter is for the preparation of ointments and for local applications to ulcerations and fissures of hands or lips. It is also used to treat muscle pulls and burns.

Irvingia gabonensis. **African wild mango butter**, African mango, Dika nut, bush mango. Africa, Congo. Family: Irvingiaceae. Traditional use: Methanolic extract of *Irvingia gabonensis* is used in the treatment of bacterial and fungal infections. The material is used as an alternative to shea butter. Moisturising and softening efficacy on skin. It protects and repairs skin and lips through its filmforming activity, thereby restoring softness and suppleness. A clinical test has shown that it is a better skin moisturiser than shea butter. It is smoothing on the skin. Chemistry: Melting point: 4.5°C. Saponification value: 190. Iodine value: 4.5. Average carbon number: 13.4. Average molecular weight: 220.64. Average molecular weight: 283.1. C10:0 1.11%; C12:0 36.6%; C14:0 53.71%; C16:0: 5.23%; C18:0: 0.8%; C18:1n-9: 1.82%; C18:2n-6: 0.49%. The minor unsaponifiable fraction contains mainly sterols and tocopherol.

Madhuca butyracea. **Phulwara butter**. Melting point: 45°C. Saponification value: 196. Iodine value: 96. Average carbon number: 16.87. Average molecular weight: 267.72. C16:0: 56.6%; C18:0: 3.60%; C18:1: 36%; C18:2: 3.78%. Traditional use: Phulwara butter is obtained from healthy seed kernels of *Madhuca butyracea* tree. It is rich in palmitic acid and is an edible food fat that makes an excellent substitute for cocoa butter, but without the typical odour of chocolate. *Mangifera indica*. Mango butter. Saponification value: 190. Iodine value: 60. Average carbon number: 17.5. Average molecular weight: 281.3. C16:0: 7%; C18:0: 43%; C18:1: 46%; C18:2: 2%. Traditional use: mango kernel oil is known to release a drug like salicylic acid at a much higher rate than a standard paraffin base emollient. Mango kernel oil is known to be used in India for soap making and as an emollient in skin care products. Carotenoids present. An unusual fatty acid, cis-9, cis-15- octadecadienoic acid was isolated from the pulp lipids of mango.

Pentadesma butyracea. Butter tree, kanya, **Kanya butter**, tallow tree, krinda, kpangan, tama. Family: Clusiaceae. West Africa, from Guinea, Sierra-Leone and Cote d'Ivoire, Togo, the Democratic Republic of Congo, extending eastwards into Tanzania and Uganda. Traditional use: it is a high oil-producing species and the odourless oil extracted from the seeds is used as a vegetable butter, and to make candles and soaps. Chemistry: the seed fat is used as an insecticide for lice. Butter tree fat extracted from the seeds has been analysed for its chemical and physical constants and fatty acid composition and compared with those of the better known cocoa butter and shea butter. Butter tree kernels, shea butter kernels and cocoa beans contained 50.0%, 52.1% and 53.4% fat, respectively. Butter tree fat, cocoa butter and shea butter are similar in several of their characteristics, particularly slip point, saponification number, solidification point and fatty acid composition; but Butter tree fat has a much lower unsaponifiable matter content (1.5% to 1.8%) than shea butter (7.3% to 9.0%). This profile aesthetically gives the butter a distinct texture. Both are markedly different from cocoa butter and cocoa butter replacement fats in respect of their melting points and fatty acid composition. The unsaponifiable fraction shows, for the sterolic composition, a predominance of stigmasterol (nearly 68% of the total sterols and having an anti-inflammatory activity) while the b-tocopherol is the main tocopherol.

Persea gratissima. **Avocado butter**. Saponification value: 187. Iodine value: 64. Average carbon number: 17.96. Average molecular weight: 277.1. C16:0: 20%; C18:1: 67%; C18:2: 15%. Traditional use: a complex blend of vitamins A and E and other active materials is reported, which increases skin elasticity and encourages healthy skin. Avocado oil is cold pressed and refined for stable shelf life. Avocado oil has been used in African skin treatments for centuries. This highly therapeutic oil is rich in vitamins A, B1, B2, B5 (Panthothenic acid), vitamins D, E, minerals, protein, lecithin and fatty acids. It is a useful, penetrating nutrient for dry skin and eczema. Avocado oil is said to have healing and regenerating qualities.

Shorea robusta. *Shorea robusta* oil, **Sal** seed oil. Melting point: 43°C. Saponification value: 190. Iodine value: 37. Average carbon number: 17.35. Average molecular weight: 284.6. C16:0: 5%; C18:0: 41.5%; C18:1: 38.5%; C18:2: 2.5%; C20:0: 8.5%. Traditional use: from the sal tree and sometimes called chus oil or sal butter, this oil from East India is a widely used emollient and skin protector. The seed oil is used as good remedy for skin diseases and scabies. It is used in ointments for skin diseases. Exceptionally good oxidative stability due to very low content of polyunsaturated fatty acids. Prevents drying of the skin and development of wrinkles. Reduces degeneration of skin cells and restores skin flexibility.

Shorea stenoptera. **Illipe butter**. Melting point: 35°C. Saponification value: 189. Iodine value: 33. Average carbon number: 17.66. Average molecular weight: 278.8. C16:0: 17%; C18:0: 45%; C18:1: 35%; C18:2: 2%; C18:3: 1%. Traditional use: Prevents drying of the skin which leads to the development of wrinkles. Reduces degeneration of skin cells and restores skin flexibility and elasticity. It also gives emolliency to treated areas of the skin. The triglyceride composition is very close to that of cocoa butter. Also called Borneo tallow. Folklore: Illipe butter is obtained from the nuts of the Illipe tree, a tree of Africa, Asia and South America. The first fruits are obtained when the tree is 15 to 20 years old. In the middle of the 18th Century, Dutch salesmen introduced the Illipe fruits onto the market. But before this trading started the natives of Borneo, the Dayakers, used the fat for medical care and cooking.

Bassia latifolia (1). **Illipe butter**. Melting point: 36°C. Saponification value: 185. Iodine value: 32. Average carbon number: 16.81. Average molecular weight: 276.19. C16:0: 23.5%; C18:0: 22%; C18:1: 35.5%; C18:2: 15%. Traditional use: an African butter used for the treatment of dry skin and especially for the care and protection of babies' delicate skin. Mahuwa oil has emollient properties and is used in cases of skin disease, rheumatism and headache. It is also a laxative and is considered useful in habitual constipation, piles and haemorrhoids and as an emetic. Tribes have used it as an illuminant and hair fixer.

Theobroma cacao. **Cocoa butter**. Melting point: 34°C. Saponification value: 194. Iodine value: 37. Average carbon number: 17.46. Average molecular weight: 276.1. C16:0: 27%; C18:0: 35%; C18:1: 35%; C18:2: 3%. Traditional use: a traditional African remedy for dry skin, suitable for the most delicate of skin types. It has excellent emollient properties and is used to soften and protect chapped hands and lips. It has also been employed in the formation of suppositories and pessaries, for rectal, vaginal, and other applications. It likewise enters into preparations for rough or chafed skin, chapped lips, sore nipples, various cosmetics, pomatums, and fancy soaps; and has also been used for coating pills. It is said to soothe the skin after sunburn or windburn. Cocoa butter is used widely as a suppository and ointment base, as an emollient and as an ingredient in various topical cosmetic preparations. Cocoa butter has been reported to be a source of natural antioxidants. Folklore: Cocoa butter is made from the expressed oil of the chocolate nut. It came originally from Central and South America and was cultivated by the Mayas. In pre-Columbian civilisations it was used as a very important food and drink, given its high energy content. The regard in which it was held is reflected in the generic name which means "food of the gods", while the specific name is derived from the Aztec word 'Kakawa'.

Theobroma grandiflorum. **Cupuacu butter**. Iodine value: 40. Average carbon number: 17.1. Average molecular weight: 271.19. C14:0: 7%; C16:0: 31%; C18:0: 44%; C18:1: 5%; C18:2: 11%; C18:3: 2%. Traditional use: Cupuacu is a small to medium tree in the rainforest canopy which belongs to the chocolate family. It has an excellent occlusivity that is not too heavy on application. A very good replacement material for cocoa butter to which it has a similar feel. Imparts gloss to the hair.

Trichilia emetica. **Mafura butter**, Natal mahogany, Cape mahogany, Christmas bells. Family: Meliaceae. found across Southern Africa in low altitude, frost-free areas where rich alluvial soils are present, mainly along rivers and the coast. The oil is easily extracted by immersing the seeds in hot water, soaking them for several hours and then crushing the seeds. This pressing process releases a solid, yellow fatty butter with a high melting point. Traditional use: the tree's leaves, bark and seeds have a wide variety of traditional medicinal uses such as treatment of stomach and intestinal ailments, as an emetic and purgative. The oil is used for rheumatism treatment. It has healing properties: the seed oil forms the basis for a leprosy remedy, is used as a cure for rheumatism, and to heal wounds. The conditioning and colouring properties of Mafura butter have made it a popular hair care product, as well as being used on the skin to nourish and revitalise. The oil has also been shown to have some antimicrobial and anti-inflammatory activity due to the presence of a number of limonoids such as Trichilin A. Chemistry: Specific gravity: 0.905. Saponification value: 200. Iodine value: 70. Average carbon number: 17.3. Average molecular weight: 273.1. C16:0: 15.5%; C18:0: 2.75%; C18:1: 50.0%; C18:2: 10.5%; C18:3: 1.5%.

Valeria indica. **Dhupa butter**, Malabar tallow. India. Dhupa butter is cold-pressed from the dried seeds of the Valeria indica tree, which grows in India. It is used as cocoa butter substitute. Dhupa butter is emollient, softening, and aids spreadability when added to creams, balms and lotions. Has been applied as a remedy against rheumatism and epidermal pains. The physical properties are comparable to cocoa butter. It has a good softening effect and spreadability on the skin. It is protective against sunlight (UV-protective) and the butter has traditionally been used for soap-making in India. Chemistry: it is high in stearic, palmitic, oleic (mainly as distearo-oleic glycerol), linoleic, linolenic and arachidic acids and has a long shelf life. Melting point: 35°C. Specific gravity: 0.912. Saponification value: 189. Iodine value: 42. Average carbon number: 18.0 Average molecular weight: 281. C16:0: 11.5%; C18:0: 41.0%; C18:1: 45.0%; C18:2: 1.2%; C20:0: 2.5%.