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Manketti oil or Mongongo oil . + Ricinodendron rautanenii (Schinziophyton rautanenii)

LATIN NAME:	Ricinodendron rautanenii (Schinziophyton rautanenii).
INCI NAME:	Schinziophyton rautanenii Kernel Oil.
CAS nr	68956-68-3. / 90063-86-8
OTHER NAMES:	Manketti/ Mongongo
SOURCE:	Cold pressed
COLOUR	Light yellow with green hues
AROMA	Nutty
CULTIVATION:	Wild harvest
ORIGEN:	Zambia



Africans have valued Manketti oil / Mongongo oil for centuries in Africa and is now gaining popularity as the rest of the world, becomes aware of its beneficial qualities. Not only is the fruit extremely nutritious, but the oil has many useful properties in softening and nourishing skin and hair

OVERVIEW



The Manketti tree is found from coast to coast in Southern Africa. The Manketti tree grows on seasonal drylands, surviving unreliable rains and temperatures ranging from sub-freezing to scorching desert heat. It is found both sporadically scattered and also in large groves throughout northern Namibia, southern Angola, Zambia, Botswana, Zimbabwe, Mozambique and Malawi

Mongongo/Manketti oil is obtained by cold-pressing the nuts that come from the Mongongo or Manketti tree. The botanical name is Schinziophyton rautanenii or Ricinodendron rautanenii.

The Manketti is a deciduous nut-bearing tree, measuring 7 – 20m tall
The Manketti / Mongongo tree, does not bear fruit until it is at least 25 years old. The large branches grow at a gentle angle to the ground and the tree can be easily climbed making them a favourite playground for children. The wood is pale yellow and is similar to balsa, being both lightweight and strong.
It has dark green hand-shaped leaves and small whitish-yellow flowers. The tree leafs in October, and then flowers and begins to bear fruit
The nuts are harvested in April when it starts to fall off the trees.

The egg-shaped, reddish brown fruit is prized by both the people and the elephants indigenous to the region. The nuts are often gathered from elephant dung, a practice that is less labour intensive than harvesting the fruit and extracting the nut from the centre. The green fuzzy fruit is somewhat plum-like and falls from the trees from April to May, maturing on the ground. Under the skin is a narrow spongy layer, at first green and pleasantly aromatic to taste, then turning brown with maturity as the flesh softens and develops its sweet date-like flavour. Elephants and Kudu feast on the sweet fruits and produce the 'nuts' cleaned of the fruit. Kudu regurgitate the nuts sometime after eating the fallen fruit, leaving them in neat piles, ready for collection while elephants defaecate the nuts, which can be picked up from their dung.



TRADITIONAL USES



Manketti fruit and nuts are commonly consumed by local people in Zimbabwe, Zambia, The Democratic Republic of Congo, Angola, Mozambique and Malawi and is a staple food amongst the San bushmen of northern Botswana and Namibia. The Manketti fruits which ripen from February to April, are collected deep in the forests as far as 25 km from villages, and it is considered a major source of food for many of the rural communities. The production of nuts depend largely on the annual rainfall.

The seeds are roasted and then cracked – this removes the hard outer shell but leaves the inner shell intact which helps to keep the kernels clean until they are required for later use. The outer shell is extremely tough and difficult to crack. This has proved a major barrier to commercial exploitation of the manketti nut but has preserved this excellent food source for the indigenous people of Africa.

The white kernel is similar to a small hazelnut, and tastes much like roasted cashews or almonds. After roasting, the kernel turns butterscotch brown and takes on a cheesy flavour. The dried, crumbly flesh of old fruit is edible for as long as eight months. Some bushmen remove the flesh from the fresh fruit, dry it in the sun, and store it for later use

CHEMICAL COMPOSITION

The nut has very high fat content (>57%) and contains a plethora of other valuable nutrients, such as calcium, magnesium, iron, copper, zinc and thiamine. Each seed contains approximately 560 mg of vitamin E (tocopherol). The antioxidant properties of this vitamin lend a high degree of thermal and oxidative stability to the oil, which greatly delays onset of rancidity of the oil, even in the intense Southern Africa heat.

What make Manketti different from other botanical oils and how does this affect its properties?

The composition of the oil in mongongo / manketti fruit differs markedly from many other plant oils used as topical hair treatments or conditioning ingredients. It is comprised of between 40-50% polyunsaturated fatty acids, as compared to shea and coconut oil, which are comprised largely of saturated fatty acids. Mango, olive, avocado, jojoba and almond oils, which are comprised mainly of mono-unsaturated oils.

COMPARISON BETWEEN VEGETABLE OILS

Fatty acids		Manketti	Moringa	Almond	Apricot	Avocado	Ev.Prim	Grape	Jojoba	Rosehip	Palm	Wheatgerm	Marula	Boabab
		%	%	%	%	%	%	%	%	%	%	%	%	%
Myristic	C14:0		0.1							0.0 - 0.3	0.5-6			
Palmitic	C16:0	7.4-9.2	3.5-6.9	3-9	3-6	12-20	5.5 - 7	6.0 - 9.0	< 3	3.4 - 4.4	35-48	11.0 - 16.0	9-12	18-30
Palmitoleic	C16:1		1.1	< 2	< 1.4	2-10		< 1	< 1	0.1-0.18		< 1	0.05-0.15	
Margaric	C17:0	0.04												
Stearic	C18:0	8-11.2	4.3-8.3	0.5-3	< 2	0.1-2	1.5-2.5	3-6	< 1	1.5-2.5	3-7	2-6	5-8	2-8
Oleic	C18:1	10.2-18	67.3-76.5	60-75	55-70	55-75	5-11	12-25	5-15	14-16	35-50	12-39	70-78	30-40
Linoleic	C18:2	38-46.4	0.4-3.5	20-30	20-35	9-17	70-77	60-75	< 5	43-46	6-13	30-57	4-7	24-34
Linolenic	C18:3	18.3	0.1	0.4	< 1	0.1-2	9-10.9	< 1.5	< 1	31-34		2-10	0.1-0.6	1-3
Arachidic	C20:0	24.9		0.2	< 1		< 1	< 0.5	< 0.5	0.1 - 0.9		< 1	0.3-0.70	
Eicosenoic	C20:1		2.3-2.6	0.2			< 1	< 0.5	65-80	< 0.5		< 0.5	0.1-0.5	
Behenic	C22:0			0.2				< 0.3	< 0.5	< 0.4		< 1		
Erucic	C22:1		4.6-7.3	0.1					10-20				0.1-0.5	

Fatty acids	Manketti	Moringa	Almond	Apricot	Avocado	Ev.Prim	Grape	Jojoba	Rosehip	Palm	Wheatgerm	Marula	Boabab
UNKNOWN	1.2												
Alpha -Tocopherol	< 1		< 1										
Delta -Tocopherol	4.2mg		0.0019										
Beta -Tocopherol	< 1												
Gamma -Tocopherol	158 mg												
B-Carotene	<0.5												
Saturated Fat	18.6		5	6	12	88	12			49	18		
Monounsaturated Fat	1		78	60	13	11	17			37	25		
Polyunsaturated Fat	10.2		17	29	71	81	71			9	55		

Fatty Acid Content of Mongongo/ Manketti Oil:

- 45-55% polyunsaturated fatty acids: linoleic acid, linolenic acid
- 17% saturated fatty acids: palmitic acid, stearic acid
- 18% monounsaturated fatty acid: oleic acid

Unsaturated molecules have at least one carbon-carbon double bond in their structure. Double bonds are connected at a different angle than single bonds which results a kink in the molecular geometry. This type of structure inhibits crystallization by impeding packing of adjacent molecules. For this reason, oils with high concentrations of polyunsaturated and monounsaturated fatty acids are typically either liquids at room temperature or melt readily upon contact with skin.

Stearic acid, a saturated hydrocarbon molecule with 18 carbons (relatively long-chain fatty acid) has a melting point of 69.6°C Oleic acid is a monounsaturated hydrocarbon with a melting point of 10.5°C (50.9°F). Polyunsaturated acids, such as linoleic and linolenic, have multiple kinks in their chains and are liquid at very low temperatures (melt point = -5°C (23°F) for linoleic acid).

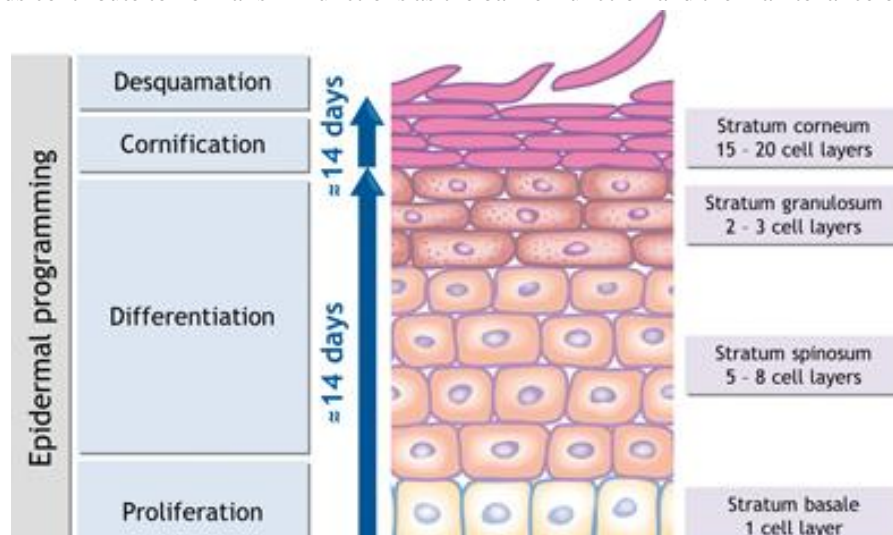
USES

NUTRITIONAL: The kernel has a protein content of approximately 25%, and a fat content of 57% of which, some 43% are polyunsaturated (almost entirely linoleic acid), 17% saturated fats (palmitic and stearic), and 18% monounsaturated (oleic). It has a high vitamin E content - around 560mg per 100 grams of kernel. This renders the nutritional content of the kernel outstanding.

The kernel contains calcium, magnesium, iron, copper, zinc, thiamine, riboflavin, nicotinic acid, and high concentrations of vitamin E (almost entirely as gamma-tocopherol) which help to support metabolism and maintenance of healthy muscle tone and skin by enhancing the function of the immune system.

SKIN- This thick, dense rich oil with a striking nutty like scent immediately enchanted one. Mostly known as a "hair oil", Manketti oil offers so much more. It is a multi-task oil, conveying many benefits to the skin. Manketti seed oil is an extraordinary product. It can be used either on its own as an intense night skin treatment or incorporated it into night treatment formulations such as serums and night creams.

Manketti oil contains two essential fatty acids (EFA's) Linoleic acid and Lenolenic acid making it beneficial for topical use. The EFA's are part of the composition of cell membranes and therefore an integral part of the top layer of the epidermis, the stratum corneum. Epidermal surface lipids contribute to normal skin functions as the barrier function and the maintenance of healthy skin and fur.



Epidermal lipids are a mixture of ceramides, free fatty acids and cholesterol. The two essential fatty acids; linoleic acid (omega 6) and linolenic acid (omega 3) cannot be manufactured by the body and is best applied topically to the skin. Both play an important part in a viable epidermis and consequently a healthy skin. It is important to note that ceramides are critical ingredients of the epidermal lipids and there is substantial evidence that linoleic acid is an essential structural component of skin ceramides. Thus, linoleic acid not only forms part of the lipid structure of the epidermis but is also utilized to help form critically important ceramides.

The high content of linoleic acid provides anti-inflammatory, moisturizing and healing support, softens the skin, restoring skin elasticity, It helps to keep the skin supple and youthful. Linoleic acid also helps to facilitate the penetration of other active ingredients such as anti-oxidants, It is an excellent ingredient to incorporate into serum formulations. Manketti oil has hydrating, regenerating and restructuring properties

Linoleic acid helps to combat acne by blocking the hypersecretion of sebum due to hormones

Due to the presence of Linolenic acid, it reacts rapidly with UV light producing polymerization. The high content of Vitamins E and Vit. C softens, moisturizes and repairs skin that has been damaged by sun exposure and dry weather

MASSAGE -Manketti oil is an excellent massage oil when used on its own or incorporated into lotions - helps to alleviate dry, scaly and flaky skin, accelerating poor wound healing by improving cell regeneration.



HAIR-The high fat and protein content makes Manketti oil a perfect ingredient to treat dry, frizzy, split hair. It restores the healthy shine and silkiness of hair whilst protecting hair from the sun. It helps to control dandruff, and reduce itchy scalp.

Baldness (hair loss)- Too much testosterone are transformed into dihydrotestosterone and that results in the hypersecretion of sebum that causes hair loss. By applying Manketti oil to the head and hair the Linoleic acid blocks the transformation of testosterone to hydro testosterone and therefore blocks the forming of sebum.

HARVESTING



Manketti nuts are harvested in Zambia along a 400km stretch of the Zambezi river. The entire process is wild harvesting and organic in an area that was up to today without development and agriculture and totally virgin soil.

- It is certified organic
- The current capacity is 2000 Tons of nuts per annum yielding 10% pressed oil and 8% butter
- Remuneration is negotiated with the Barotse Royal Establishment once per year
- The local community benefits from the “NUTS FOR CASH” campaign.

NUTS for CASH CAMPAIGN



The local Zambian women act as nut harvesters and collect the nuts from under the trees leaving them at predetermined collection points along the road. Collection is done using a 10Ton Truck that also acts a famine relief distribution vehicle



Payment is effected on the spot either by way of money or exchange of maize, which is the staple food of the local population. The latter form of payment is often preferred as the distance to the nearest town is about 60km away and the cost to get there exorbitant