



IntegriLIPID Manketti Oil Refined

INCI Name: Ricinodendron rautanenii (Manketti) Oil

History

The African savanna is a lush area filled with life. There are many trees in this area, one of them, unknown by many, is the manketti tree. The Schinziophyton rautanenii (formally known as the Ricinodendron) is found in the African savanna. Its habitat is dotted with trees and does not receive enough rain to be considered a prairie. The countries that lie in this biome are Mauritania, Guinea, Liberia, Ethiopia, Sudan, Chad, Mali, Niger and Uganda. The savanna has two seasons, summer and winter. Temperatures average from about 68 to 86 degrees F (20 to 25 degrees C). The average precipitation ranges from 10 to 30 inches (100 to 150 cm) per year. It lies between 20°North to 34°South latitude and 15°to 35°East longitude. Most of the southern and eastern part of Africa is more than 3,000 feet above sea level while the western, northern and central parts are between 500 to 2,000 feet. The savanna has a long dry season and is filled with many grasses and scattered clumps of trees.

Some common names for this tree are manketti tree, mongongo nut and featherweight tree. The manketti tree prefers hot and dry climates with low amounts of rain. It also prefers to grow in wooded hills and sand dunes. The manketti tree has a large, straight trunk with stubby and contorted branches and a large spreading crown. It has an upright manner of growth and is about 49 to 66 feet (15 to 20) meters tall. The leaves are a distinctive hand shape and are compound. The leaflet is a wide lance to an egg shape. They are composed of seven leaflets that are carried on hairy stalks that are up to 6 inches (15 cm) in length. The leaves are about 6 inches (15 cm) long and both sides are dark green in color. They are covered in fine hairs and are arranged alternately on branches.

The flowers are somewhat oval in shape, and are about 1 1/4 inch (3.5 cm) long, 3/4 inch (2.5 cm) wide, and are about 1/2 inch (10 mm) in diameter. They flower in early summer. The whitish flowers are carried in slender loose spays.

The taproot on the manketti tree goes down until it reaches water. In this case, it is long because it is located in the savanna. The lateral root is very small. The manketti tree is deciduous. It has made many adaptations to its environment including a trunk that can store water, a long taproot to reach water, thick bark to resist annual fires and leaves that drop off in the winter to conserve water.

The manketti tree is distributed widely throughout the southern savanna (South Africa etc.). It is considered a rapid growing tree and has been designated a protected tree in Namibia since 1952, probably because of its socioeconomic importance. Also, the nuts and fruit are very popular and are part of the African daily diet. The nuts also give oil and are considered one of the most important nuts in Africa. The fruit is about 1 1/4 inches (35 mm) long and 1 inch (25 mm) wide. The fruit ripens on the ground and the color turns from the original yellow to reddish brown with ripening. This tree is important to African life and will hopefully continue to prosper in the wild.

Description of the tree and fruit

Ricinodendron rautaneii is a large (up to 15 meters) straight trunked tree, with a broad spreading crown with dark green compound leaves of 5 to 7 ovate to elliptical leaflets at the end of a stalk up to 15cm (6 inches) long, not unlike those of *Casimiroa edulis*. The branches are stubby and contorted. There are separate male and female trees, so solitary specimens will not fruit. In addition, trees take around 25 years to commence fruiting. The tree flowers - depending on local climatic variations - in Southern Africa's hot dry season, which is around October to December. The small whitish-yellow flowers become a somewhat oval, vaguely plum-like fruit about 3.5 cm long and 2.5 cm wide. The young fruit is at first covered in fine small hairs on its thin but tough outer skin; under the skin is a narrow spongy layer, at first green, then turning whitish brown with maturity. The fruit fall from the tree with the skin still green (variably, april to may), and matures on the ground. There, the skin turns brown, and the flesh softens and develops full flavor. This soft spongy pulp layer is about 20% of the fresh fruit (by volume), pleasantly aromatic and sweet at maturity. Its taste has been compared to a date, and although high in sugars there is not an absolutely high amount here is (very approximately) 1 gram of sucrose in the *dried* flesh of each manketti fruit.

Like many trees of seasonally arid or cold climates, the trees lose their leaves every year, towards the end of the cold-dry season of autumn and winter (variably, about June to the end of August). And it is at this time that the last of the ripe fruit fall. They are a lot easier to see when the leaves fall at this time, and it is easy to pick up the fallen fruit. The supply of fruit decreases after winter, as the rainy season (very variably, at some time in the period November to April, broadly regarded as the 'summer rainfall' area) comes on; insect and animals destroy the fruit where they fall. Even the dried, crumbly flesh of old fruit is edible -there may be edible dried fruit on the ground for as long as eight months, overlapping the fall of the new crop. Some bushmen remove the flesh from the fresh fruit, dry it in the sun, and store it for use later in the year. Both Bantu and

Bushman peoples use the fruits, with the modern preference being to boil the whole fruit to remove the tough and indigestible outer skin, and make a sweet, maroon colored porridge - very similar to 'applesauce'(USA)/stewed apples

(British colonial) - from the flesh.

But the sugar content is only part of the story.

The big value is in the seed. The skin takes up 10% of the fruit by volume, the flesh 20%. The remaining 70% is the nut-like seed, including the wide hard shell around it. The 'shell' (endocarp) around the 'kernel' is very thick indeed, and although porous, it is very hard and tough. So hard that even elephants, which love the sweet fruit, can't crack them.

The Nut Meat

Once collected, the hard shell can be broken between two rocks, and the single kernel (sometimes there are two) extracted. It is easier to crack if it is roasted in a fire first - or, as in some areas, covered in sand and a fire built on top. The kernel or 'nut meat' is surrounded by a hard but thin seed coat which is easy to remove by hand. The kernel is about the size of a hazelnut (the weight of Botswana and South West African kernels is about 1.4 grams).

The creamy yellow nut meat is oily and nutritious; it is very good eaten raw, and even more delicious when it is roasted. Indigenous people sometimes mix the nut meat with sand and red hot ashes from the fire, after which the roasted seeds taste like roasted cashews. Curiously, it is reported that roasted for longer, they then taste like 'fine old cheese'.

Nutritional value of the kernel

Their nutritional content is outstanding. The kernel is 57% by weight fat. Of this, about 43% are polyunsaturated fats (almost entirely **linoleic acid**), about 17% saturated fats (**palmitic** and **stearic**), and about 18% monounsaturated (**oleic**). Add the sugars in the fleshy part, and, by one estimate, an adult man would meet 71% of his daily energy requirement by eating 100 fruits (kernels and flesh). Indigenous people have been reported as eating around 100-300 fruit a day in parts of Namibia.

The kernel has 26 grams of protein per 100grams, an amount similar to peanuts and other protein rich legumes.

The kernel has, per 100 grams, approximately 193 mg of **calcium**, 527 **mg magnesium**, 3.7 mg **iron**, 2.8 mg **copper**, 4 mg **zinc**, 0.3 mg **thiamine**, 0.2 mg **riboflavin**, 0.3 mg **nicotinic acid**, (the flesh has about 15 mg **vitamin C**), and a stunning 565mg of **vitamin e** (almost entirely as γ -tocopherol). Due to the very high γ -tocopherol content, the oil is very stable, and doesn't oxidize into 'rancidity' for a very long time, in spite of the African heat.

Productivity

That these are a productive tree in their environment is undisputed: one estimate is that each female tree has around 950 fruit a year, given a sufficient rainy season. In a good year, they may be "knee deep" under the trees, with yield depending in part on how good the rains of the previous year were. In areas where they are the dominant species they can occur every 20 meters or so; some large stands have been estimated at up to 60,000 hectares. In the early 1900's, around 2,000 tons of nuts a year was exported from Namibia's dryland Tsumeb forests; presumably with little consideration they were commandeering the local peoples most important food source in an unforgiving environment.

Manketti Oil is rich in eleostearic acid, and naturally stabilized vitamin C (anti-oxidant), which together **nourish, restore vitality** and **protect hair from UV light** and **external aggression**.

Manketti Oil, also called Mongongo oil, is highly **emollient** and **protects the skin from environmental damage**.

Fatty Acid Profile		%
Palmitic	C16:0	11.2
Palmitoleic	C16:1	0.10
Stearic	C18:0	8.50
Oleic	C18:1	21.3
Linoleic	C18:2	42.4
Trans		
9ct11t CLA		0.20
10t12c CLA		1.30
γ-Linolenic	C18:3	0.20
Δ-Linolenic	C18:3	0.70
Stearidonic	C18:4	0.20
Icosanoic	C20:0	0.30
Icosenoic	C20:1	0.50

Benefits:

Nourish
Restores Vitality
Protects hair fiber from UV
Protects hair fiber from external damage
Emollient
Protects skin from environmental damage

Uses:

Creams
Lotions
Sun Care Products
Lip Balms
Hair Conditioners
Hair Oils
Body Oils
Body Butters

Use in your formulations at 1-10%.

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