Baobab Fruit Pulp Extract

Botanical name: Adansonia digitata
Common name: Baobab, Monkey Bread Tree, Kremetart tree, Cream of Tartar, Upside-down Tree

The baobab was amongst the first trees to appear on the land. Next came the slender, graceful palm tree. The baobab saw the palm tree and cried out that it wanted to be taller. Then the beautiful flame tree appeared with its red flower and the baobab was envious for flower blossoms. When the baobab saw the magnificent fig tree, it prayed for fruit as well. The gods became angry with the tree and pulled it up by its roots, then replanted it upside down to keep it quiet.

- African Folklore

Description
The Latin name for Baobab, Adansonia digitata, is in honour of the French botanist, Michel Adanson, who concluded that out of all the trees he had studied, the Baobab, “is probably the most useful tree in all”. M. Adanson is himself testimony to this claim: he consumed Baobab juice twice a day, throughout his five years in Senegal and remained convinced that this maintained his fighting health. The discovery of Baobab fruits in ancient Egyptian tombs has demonstrated how prized these fruits were, however they were notoriously difficult to acquire, since the Egyptians were reliant on traders traveling the caravan route from Sudan. It seems that the commonly used European name, Baobab, originated from the Cairo merchant’s usage of the word, bu hobab, for a fruit not indigenous to Egypt.

The Egyptians found a niche for the Baobab Fruit Pulp in Europe where the powdered extract formed a competitive rival to the tablet terra lemmia, a sacred sealed earth, used to cure those consumed by poison. The Baobab’s famous silhouette has become legendary, generating the common name, “the upside-down tree”, to describe the unusual root-like branches which are seasonally devoid of foliage. Baobabs are found throughout Africa - mostly in the hotter, drier areas and indeed, many people’s first reaction is to marvel at their strange shapes and proportions. With their massive trunks, crooked branches and furry fruit, baobabs have adapted to a dry and hostile environment, and the secret to success may just lay in their appearance. The massive trunk has little wood fiber and can hold up to 300 liters of water, enabling it to live through long periods without rain. The trees have fruit as unique as the tree itself. It may be round or oval shaped and has a fury coating around a hard woody shell that shields a number of seeds rich in citric acid and oil, embedded in a whitish, powdery-soft and nutritious pulp, called “monkey-bread”.

Traditional Uses
The medicinal uses of the Baobab’s fruit were first officially praised by Venetian herbalist and physician Prospero Alpini, in 1592, who noted that the ancient Egyptians used it for treating fevers, dysentery and bloody wounds. However, even prior to Alpini’s writings, the fruit has a long history of safe nutritional and medicinal usage in Africa. In traditional medicine, baobab fruit pulp is used to treat fever, diarrhea, malaria, haemoptysis, as a febrifuge, painkiller and in the treatment of smallpox and measles. Cosmetic products are also made from the pulp and leaf extracts.

A cool drink is made out of the pulp which makes for a refreshing break. This lemonade type drink is consumed by both the healthy and the sick. It is also often given as a calming agent for those with a fever, but is also used to combat diarrhea, dysentery, small pox, measles and haemoptysis. Pregnant women in The Gambia use it as an important source of Calcium. In addition, the herding people in Africa used the citric and tartaric acids of the pulp as milk curdling agents.

Products are derived from parts of the tree including dried leaves which are rich in carotene, calcium and mucilage. The bark and leaves are also useful in the treatment of fever and are reported to have anti-inflammatory properties. The seed is either pulped and applied externally, or as a drink in water to cure gastric, kidney and joint diseases.

Active Ingredients
The baobab fruit pulp is a very important nutritional supplement with interesting medicinal properties and is best-known for its high vitamin C (Ascorbic acid) content and is thus often given as a calming agent against fever. The pulp also contains high values of carbohydrates, calcium, potassium, thiamine and nicotinic acid. Most significant is the Integral Antioxidant Capacity (IAC), which is due to the presence of ascorbic, citric, tartaric, malic and succinic acids. Other essential vitamins present are riboflavin and niacin. In addition, the pulp contains 23% pectin making it an important binding and diluting ingredient. The antioxidants are essential for protection against free radicals, maintenance of metabolic processes, synthesis of steroidal hormones, connective tissues, assisting neurotransmitters and preventing degenerative diseases, as well as increasing the body’s ability to absorb calcium and iron. The pulp has proven to stimulate intestinal microflora making it a potential prebiotic ingredient. Tests have also confirmed its importance as an anti-inflammatory, antibacterial, antifungal, antipyretic and analgesic agent.

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Parts Used
Fruit pulp

Product
Baobab 50/50 powder extract (PE)
Free flowing depectinised powder
Good solubility, clear in solution

Manufacturing procedure
Water extract which is spray-dried onto Maltodextrin into a fine hygroscopic powder.
Contains no preservatives or colorants.

Product Specification
- Plant material used: Adansonia digitata fruct pulv. sicc
- Appearance: Beige powder
- Odour and Taste: Characteristic of Adansonia digitata
- Extract solvents: Water
- Country of origin: South Africa

Chemical Specification
- Solubility: 0.3 g/100 ml
- Moisture: < 5% m/m
- Ascorbic acid: 200-300 mg/100g
- pH: @15% solution m/m
- Thin Layer Chromatography: Compare to references run under the same conditions

Metals
- Lead: < 5 mg/kg
- Cadmium: < 0.2 mg/kg
- Mercury: < 0.1 mg/kg
- Arsenic: < 3.0 mg/kg
- Calcium: 130 mg/100g

Microbiological Specification
- Total aerobic count: < 10 000 cfu/g
- Coliforms: < 100 cfu/g
- Yeast and Moulds: < 100 cfu/g
- Escherichia coli: Absent/g
- Staphylococcus aureus: Absent/25g
- Salmonella: Absent/10ml

Storage and Packaging requirements
- Standard packaging: 1kg and 5kg
- Storage conditions: Closed airtight container, dark, cool and dry conditions

Possible Applications
Can be used in product formulation to provide nutritional fortification, flavour enhancement, viscosity and texture modification and as a source of dietary fibre and nutrients. Specific applications could include:
- Soft drinks
- Natural fruit smoothies
- Fruit fillings, jams, sauces, puddings and desserts
- Snack bars, breakfast cereals, biscuits and snacks
- Health supplements, botanical extracts including antioxidants
- Various active cosmetic uses, including antioxidants for anti-aging, skin tightening, moisturizers, and hair and nail strengthening products.