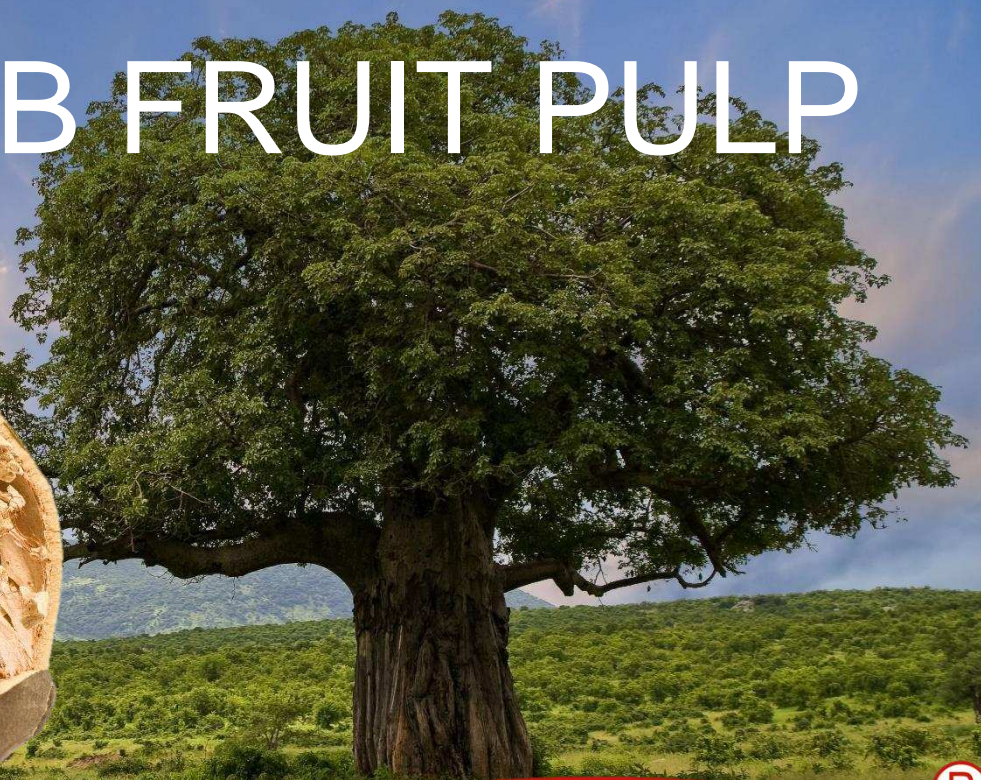


# SLI Chemicals GmbH

Trading in Fine Chemicals



## BAOBAB FRUIT PULP



bi@mega®





## Baobab Fruit Pulp (*Adansonia digitata*)

The baobab is one of the most famous trees in Africa. The tree has long been an important source of human nutrition. Indigenous peoples traditionally use the leaves, bark, roots, fruits and seeds as foodstuffs, as well as in medical applications for humans and animals. The tree is also commonly called the upside-down tree, and monkey-bread tree.



The baobab fruit pulp has a refreshing taste and is very nutritious, with particularly high values for carbohydrates, vitamins and minerals. The pulp is a rich source of calcium (300 mg/100 g) and potassium (3 g/100 g). The fruit pulp has a high vitamin C content (300 mg/100 g), almost ten times that of oranges. 100 g of baobab fruit pulp comprises in total 78 % carbohydrates including 50 % dietary fibres, half soluble and half insoluble. Recently, dietary fibre has gained increased importance as a component of the diet, thanks to its ability to influence multiple aspects of the digestive physiology.

Baobab fruit pulp is used for multiple medicinal purposes in many parts of Africa. Traditionally the pulp is used internally in cases of dysentery and diarrhoea as well as an immunostimulant. Aqueous extract of the baobab fruit pulp produces marked anti-inflammation and anti-pyretic activity.



Our Baobab Fruit pulp is available as organic and certified for the European market.

How to use Baobab? Further information: [www.biomega.eu](http://www.biomega.eu)

## From the tree to the customer



Fruits on the trees in the dry regions of West Africa, wild harvesting.



Separation of the red funicles.

Due its high anti-oxidant capacity is it used for cosmetics.



Purchasing of the whole fruits in selected villages.



Seeds are covered by the fruit pulp.



Transport to the production site.



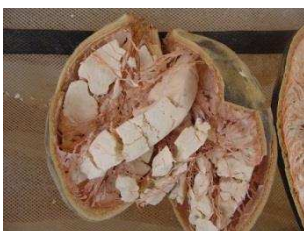
Separation of the fruit pulp from the seeds. The fruit pulp is sieved. The finished product is a powder.



Fruits are selected and cleaned.



Seeds will be used to produce an excellent cold pressed oil.



Split shells from the fruit content. Insufficient fruits are removed.



Ready for the transport to EU.



Fruit pulp including seeds, red funicles.



Stored in our warehouse in Austria.



## 20.10X SPECIFICATION

### Organic baobab fruit pulp as food or nutritional supplement

**Botanical description:**

*Adansonia digitata*, Bombacaceae

**Harvest time:**

January until April (Northwest Africa)

**Product description:**

The Baobab fruits are harvested from trees. The hard shells are cracked open and the pulp is separated from the seeds and the shell. The pulp is sieved and packaged.

**Additives and preserving agents:**

None

**Approval:**

Novel food by European Commission, C-2008-3046, with notification of April 2013  
G.R.A.S.: Agency Response Letter GRAS Notice No. GRN 000273

**Certification:**

According to 2007/834/EC, approved as organic (biologisch, ökologisch)

**Sensorical properties:**

Appearance:	powder; white to peach/light beige
Odour:	typical
Taste:	typical, tartish

**Physical properties:**

pH (solution 10 %):	< 3
Solubility:	ca. 75 % hydro soluble, rest hydro dispersible

**Storage conditions:**

Well closed at room temperature; away from light, heat and humidity

**Food formulations:**

Fortified yoghurt with prebiotic fibres; dairy products, ice-creams, smoothies and fruit juice, drinks, bread, cakes, bars, biscuits, confectionery, jams, functional food

**Dosage:**

5-8 g a day per person

**Labelling of the foodstuff:**

Baobab fruit pulp (Baobab-Fruchtfleisch), for other countries see document "official names"

**Allergen labelling:**

According to 2011/1169/EC, no allergens; gluten and lactose free

## 20.10X SPECIFICATION

### Organic baobab fruit pulp as food or nutritional supplement

#### Pesticides, GMO, ionising radiation, nanomaterials and chlorate/perchlorate:

According to 2007/834/EC and 1169/2011/EC; not contain any pesticides or GMOs;  
no ionising radiation takes place and no nanomaterials are added or used.  
Chlorate/perchlorate matches the statement of the European Commission.

#### Heavy metals and mycotoxins:

Conform to 2006/1881/EC et sqq.

#### Kosher, halal; vegan, vegetarian:

Qualified, non-certified, suitable

#### Nutritional values, average values per 100 g fruit pulp:

Energy:	198–280 kcal/823-1164 kJ
Carbohydrates total (dietary fibres, sugar)	78,0-90,0 g
Proteins:	1,8-3,7 g
Fat:	< 1,2 g
- thereof saturates:	< 0,6 g
Ash:	3,8-6,6 g
Moisture:	< 11,5 %

#### Sugar and dietary fibres, average values per 100 g fruit pulp:

Dietary fibres:	30,0-60,0 g
Sugar (carbohydrates):	20,0-33,0 g
- thereof saccharose:	10,0-24,0 g
- thereof fructose:	2,0-8,0 g
- thereof glucose:	2,0-8,0 g

#### Minerals and vitamins, average values per 100 g fruit pulp:

Calcium (Ca):	250,0-380,0 mg
Phosphor (P):	25,0-51,0 mg
Magnesium (Mg):	130-180 mg
Potassium (K):	1800,0-3000,0 mg
Iron (Fe):	0,7-11,2 mg
Sodium (Na):	0,1-10,5 mg
- Salt = Natrium x 2,5	0,2-21,0 mg
Vitamin C:	150,0-300,0 mg

#### Microbiological guidance levels (DGHM) per g fruit pulp:

Total plate count:	$\leq 10^4$ CFU
Moulds:	$\leq 10^4$ CFU
Enterobacteriaceae:	$\leq 10^2$ CFU
<i>Escherichia coli</i> :	$\leq 10^1$ CFU
<i>Salmonella sp.</i> :	absent in 125 g

While the information contained in this specification are presented in good faith and believed to be accurate, they are provided for guidance only. Because many factors may affect processing or application/use, we recommend that you make test to determine the suitability of the product for your particular purpose prior to use.



# Baobab Fruit Powder as a wholesome Food Ingredient

By Gabriele Fernsebner and Martin A. Spaeth, Biomega e.U.

The baobab tree (*Adansonia digitata* L.) is a member of the Bombacaceae family and a genus of nine species of tree. The baobab is widely distributed through the savannas and drier regions of Africa but it is also common in Asia, Central America and in the Caribbean region.

The generic name honours Michel Adanson, the French naturalist who described *Adansonia* for the first time. *Digitata* refers to the fingers of a hand, which the leaflets bring to mind. The tree is also commonly called the upside-down tree, bottle tree and monkey-bread tree. The trees reach heights of 20 m with a trunk 10 m in diameter and branches 50 m in diameter.

The baobab has long been an important source of human nutrition. Indigenous peoples traditionally use the leaves, bark, roots, fruit and seeds as foodstuffs, as well as in medicines for humans and animals.

## Fruit harvesting and production process:

Upon pollination by fruit bats, the tree produces large green or brownish fruits which are capsules and characteristically indehiscent. The capsules contain a soft, whitish, powdery pulp and kidney-shaped seeds (Sidibe and Williams 2002). After the fruit is collected, the hard outer shell of the fruit is cracked open and the contents are removed. The seeds are then separated from the fibrous material and the fruit pulp. This is screened to remove further unwanted fibrous and flaky material. Finally the food-grade powder is sieved and packaged.

## Nutritional properties:

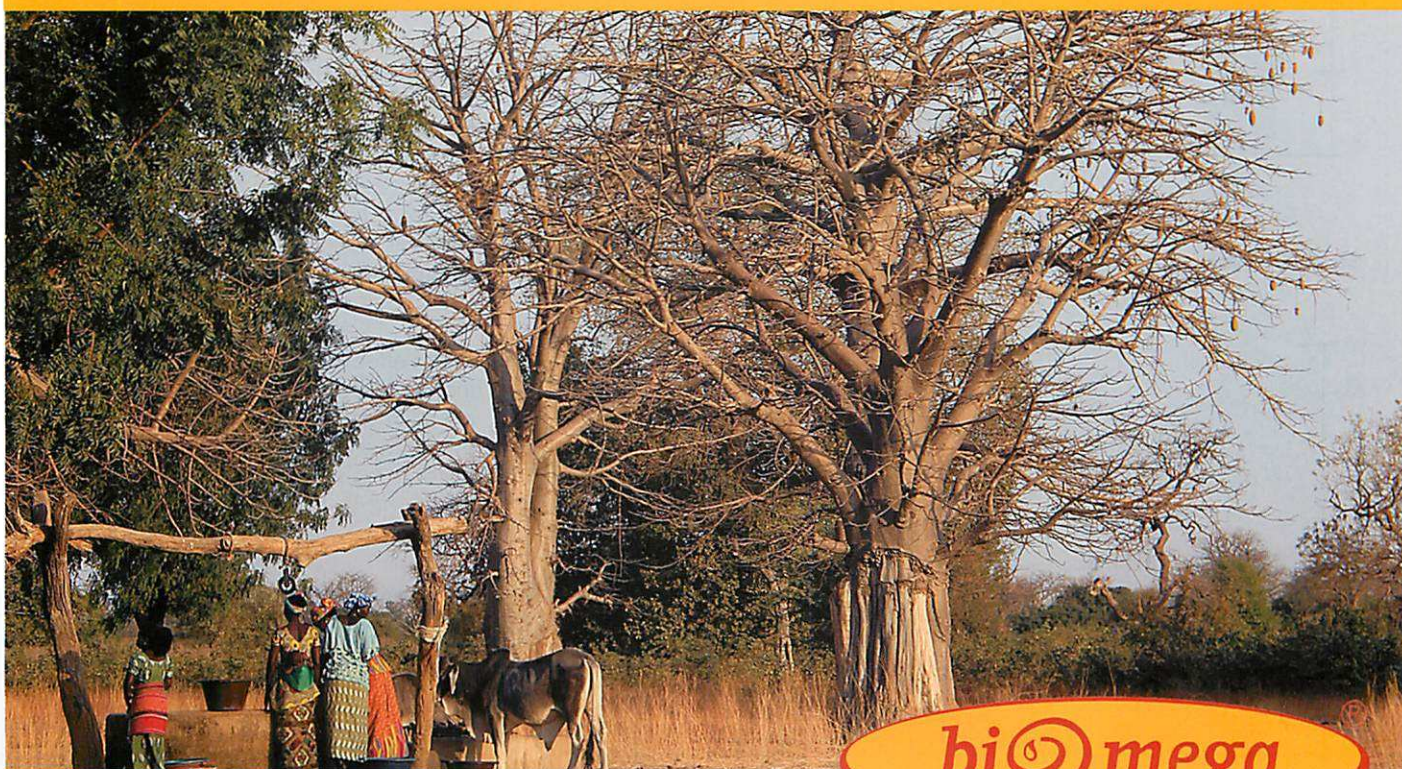
100 g of baobab fruit pulp is comprised of about 80 % total carbohydrates (including dietary fibres), 2-3 % proteins and a

very low content of lipids (< 1 %). Furthermore, the fruit pulp is rich in vitamin C and minerals like calcium and potassium.

## Dietary fibres

Baobab fruit pulp provides soluble and insoluble fibres, specifically around 50 g of fibres per 100 g of pulp. Recently, dietary fibres have gained increased importance as a component of the diet, thanks to its ability to influence multiple aspects of the digestive physiology. In combination with a diet rich in vegetables, cereals, and fruits, frequent consumption of dietary fibre has been associated with a reduced risk of cancer involving the digestive tract, and in particular, the rectal colon tract (Okazaki et al. 2002, World Cancer Research Fund 2007). Dietary fibres are fundamental in the composition of a healthy and balanced diet. Regular consumption of fibre-rich foods can also help in preventing

## Baobab is the Fruit of the Future



biomega

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baobab & more



constipation and maintaining a healthy body-weight (Murray et al. 2001).

The insoluble fibres are not adsorbed by the intestine and are useful against constipation and to induce satiety, due to their ability to increase the faecal mass and to stimulate peristalsis. This latter aspect may be useful in case of hypo-caloric diet (Garcia Peris and Cambor Alvarez 1999).

The recommendation for the daily intake (RDA) of dietary fibres is 30 g per day. A mere 70 g baobab fruit pulp already contains the guided value (DGE 2008).

#### **Vitamins and minerals**

Baobab fruit is known for its high content of vitamin C (ascorbic acid); in specific, 100 g of pulp contains up to 300 mg of vitamin C. This vitamin is extremely important as a nutritional element and as a supplement. Vitamin C protects the body against free radicals, and is the most effective antioxidant in hydrophilic compartments; moreover, it participates in several metabolic processes, such as collagen biosynthesis in connective tissue, neurotransmission, and steroidal hormone synthesis. It also increases calcium absorption and iron bioavailability (Arrigoni 2002) and is related to the prevention of many degenerative diseases like cataract formation, cardiovascular risks and arteriosclerosis (Sauerlich 1994, Weber et al. 1996).

The RDA for vitamin C is 80 mg (Commission Directive 2008).

Considering that baobab's vitamin C content is 300 mg per 100 g of pulp, the oral intake of 26 g provides the daily recommendation of vitamin C for humans.

The fruit also contains other essential vitamins, such as vitamin B2 (riboflavin), necessary for growth and maintaining the integrity of nervous fibres, skin and eyes, and vitamin B (niacin or PP), important for the regulation of several metabolic processes.

In addition the fruit contributes to the supply of other important dietary nutrients, such as minerals. 100 g of pulp contains about 300 mg of calcium, 3000 mg of potassium and 30 mg of phosphorus.

#### **Suggested dosage:**

The suggested intake of 5 to 15 g of fruit pulp will help ensure a highly nutritional level of fibres, vitamins, minerals, proteins and carbohydrates. The powder can be diluted directly with milk or fruit juices.

Furthermore, the powder fortifies yoghurt with prebiotic fibres and can be used as additional ingredient in beverages, dairy products, ice-creams, bread, cakes, bars, biscuits and confectionery.

#### **Traditional use and medicinal benefits:**

In some areas the use of baobab milk is very common. The dried pulp is made into a solution with water or fresh milk. In the traditional use, the baobab drink is used by women during pregnancy and in some cases as nourishment for babies (Prentice et al. 1993).

In addition the Baobab fruit pulp is used for multiple medicinal purposes in many parts of Africa.

#### **Antioxidant activity**

Dietary antioxidants are believed to be effective nutrients in the prevention of oxidative stress-related diseases. The use of the oxygen radical absorbance capacity (ORAC) assay as a tool for antioxidant assessment is described and proposed as a method for comparing botanical sources and for standardizing antioxidant supplements. The range of ORAC for common fruits is around 1,40  $\mu\text{mol/g}$  (watermelon) to 95  $\mu\text{mol/g}$  (cranberry). Recent studies have shown that baobab fruit with ORAC of 250  $\mu\text{mol/g}$  has a remarkable antioxidant capacity. It may prevent against free radical damage (Besco et al. 2007).

#### **Anti-inflammatory, analgesic and anti-pyretic activity**

Aqueous extract of the baobab fruit pulp produces marked anti-inflammation and anti-pyretic activity. The extract also

produces marked analgesic activity. The anti-pyretic activity resembles that normally induced by a standard dose of administered acetylsalicylic acid (Ramadan et al. 1993).

#### **Anti-microbial activity**

An acid medium, as created by the addition of baobab fruit pulp to tempe fermentation could prevent the growth of pathogenic bacteria such as *Salmonella sp.*, *Bacillus sp.* and *Streptococcus sp.* and increasing concentrations of baobab powder led to an increase in the population of lactic acid bacteria (Afolabi et al. 2005).

#### **Anti-dysentery and anti-diarrhoea, immunostimulant**

Traditionally the baobab fruit pulp is used internally in cases of dysentery and diarrhoea and as an immunostimulant. The fruit pulp has been evaluated as a substitute for western drugs (Al-Qarawi et al. 2003).

#### **Hepatoprotective activity**

The aqueous extract of the baobab fruit pulp exhibited significant hepatoprotective activity and its consumption may play an important part in human resistance to liver damage in areas where the plant is consumed (Al-Qarawi et al. 2003).

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# Certificate



Cert. No: 4-01494-2016

**Biomega e. U.**

Pichl-Großdorf 23, 8612 Tragöß

Main activity: importer, trader, processor

The above mentioned operator has been in possession of a valid inspection contract with Austria Bio Garantie GmbH since 2009-08-14. On the basis of the inspection conducted on 2016-07-19 the operator is certified according to the following rules:

- Regulation (EC) No 834/2007 and Implementing Rules, current version
- Austrian Food Codex chapter A8, current version

This document has been issued on the basis of Article 29(1) of Regulation (EC) No 834/2007 and of Regulation (EC) No 889/2008. The declared operator has submitted his activities under control, and meets the requirements laid down in the named Regulations.

Austria Bio Garantie confirms that the products named below may be distributed according to the above mentioned specifications and with terms referring to the organic production:

baobab fruit pulp, organic  
baobab fruits, organic  
baobab leaves, organic  
baobab pericarp, organic  
baobab red fiber, organic  
baobab seeds, organic  
baobab tea, organic  
shea butter, organic  
vegetable oils, organic

During this period, the certificate retains its validity only if:

- a) The products fulfill specifications.
- b) A valid supervisory contract is in evidence.

This certificate relates exclusively with those products listed above.

This certificate is valid until 2017-12-31.

Representing the department  
Dr. Johanna Ortel

Managing director  
DI Hans Matzenberger



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Code number of control body: AT-BIO-301, www.abg.at

Customer number: 712835  
ABG0059EN Ecert Version 7.0  
Page 1 of 1  
2016-08-12



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