

AIBIKA



• Aibika plant at the Ministry of Health Nutrition Unit garden, Apia, Samoa



• Mature plants showing 3 distinct leaf shapes

Botanical name: *Abelmoschus manihot* (Malvaceae)

Location specific common names: bele, pele, Pacific cabbage, slippery cabbage, edible hibiscus, neka

Plant characteristics: Under reasonable growing conditions aibika is a fast growing bush, similar in appearance to cassava but without any storage roots or tubers. Closely planted and trimmed, the plants can be grown as a hedge. The relatively large leaves can vary from round to bird foot shaped. Some varieties are hardier than others and some produce softer, less fibrous leaves.

Uses: Aibika leaves and short succulent tips are usually cooked but can be eaten fresh. Slightly older leaves are best steamed, boiled, fried or baked. It is a suitable first food for infants when boiled and mashed with root vegetables. If boiling aibika a little water should be used, as some minerals, especially potassium, magnesium, zinc, iron and calcium are lost in the water; any water should be consumed as soup. Aibika (and most other cooked leaves) is ideally served with coconut cream, which increases the uptake of beta-carotene and conversion to vitamin A. Traditionally aibika has medicinal uses such as treating sore throats, stomach aches, diarrhoea, increasing milk production, and preventing bone loss.

Availability: This plant can be grown all year in most tropical locations but growth often slows with cooler, shorter days and drier conditions.

Propagation methods: This plants can be grown from seeds or cuttings; seed-derived plants are usually slower to establish and may vary from the parent plant. Cuttings of mature wood, from 200 to 600 mm long, are the most suitable for propagation, and should be planted with at least one third under the soil surface.

Cuttings can be stored or transported for a few days provided they are kept in the shade, and in a little water, which should be regularly changed to reduce the possibility of stem rots.

How to grow: Aibika is not difficult to grow providing the soil is rich in organic matter and water is readily available. Plants can grow in full sun preferably with some shade in the afternoon. Mulching the plants is recommended to keep the soil moist and free of grass and other weeds. To reduce bark rots the mulch must not be in contact with the immediate base of the plant. Regular pruning will encourage growth.

Threats: Pests and diseases, other than leaf eating insects and post harvest leaf rots, do not usually affect the growth of aibika. Leaf eating insects like *Nisotra* beetles, grasshoppers and some caterpillars can cause problems in drier weather, especially on plants growing in full sun. Selecting healthy planting material and providing good growing conditions will reduce the occurrence and impact of these pests.

Harvesting: Depending on the amount of aibika being grown and the growing conditions, harvesting can be carried out daily. Selected leaves and even the growing tips back to the newest full leaf should be picked, ideally in the cooler hours of the day to prevent wilting.

Post harvest and storage: The leaves and tips should be washed carefully with water of drinking quality or clean seawater. They can be loosely bundled in damp paper, and if kept cool, should store for a day. If placed in an airtight container in a cool room or refrigerator, they can store for two or three days.

Project findings/nutritional value: Samples of aibika for analysis were collected from the Torres Strait Islands, Tonga, Samoa and Solomon Islands. Around



• Leaves with *Nisotra* beetle damage



• Potted cutting established and ready to plant



• Harvested leaves suitable for cooking

100 grams of fresh leaf (about 3 handfuls) per person for a meal serving will provide useful nutrition. We found this to be the best leafy vegetable analysed, for all-round nutrition: carotenoids, protein and various minerals. There was some variation in nutrient levels between varieties grown on the same soil.

Carotenoids: Aibika had the highest levels of lutein, which is important for eye health (e.g. reducing risk of cataracts) in all of our samples, and was also high in beta-carotene (pro-vitamin A), important for vision, immunity and bone health.

Protein: This is important in forming muscle, cell membranes, enzymes, blood components (including haemoglobin, albumin, transferrin), antibodies, DNA and RNA. The nitrogen analysis here indicates a protein content of around 22%.

Magnesium: This mineral is important in bone formation, energy production, and nerve and muscle function.

Zinc: Important for immunity, growth, carbohydrate metabolism, and DNA and protein formation. Humans have around 600 different Zn-containing enzymes/proteins.

Manganese: Enzymes containing manganese are important in the metabolism of carbohydrates, protein and fats, and in enhancing immunity.

Calcium: The most important mineral for the growth and maintenance of bones and teeth. Calcium is also important for cellular physiology.

Sulphur: Needed for production of the hormone insulin, which controls blood sugar level. Sulphur is also needed for the protein keratin, important for bone, cartilage and tendons.

Iron: Important for healthy blood and energy.

Potassium: Controls body water balance through its interactions with sodium and chloride ions, and is involved in electrical stimulation of nerves and muscles. Deficiency can cause muscle weakness, cramps and irregular heartbeat.

This table compares selected mineral nutrients and carotenoids in leaves of aibika (average of three different types according to leaf shape), okra and “sandpaper cabbage” (*Ficus spp.*) grown together at Burns Creek, Honiara, Solomon Islands in 2012 and english cabbage (average of samples bought from Honiara market, Solomon Islands and Nukualofa market, Tonga in 2012) (concentration in mg/kg dry weight, except N: % dry weight).

	Fe	Mn	Zn	Ca	Mg	K	S	N %	lutein	alpha carotene	beta carotene
Aibika	73	77	44	23600	7100	32000	4500	4.9	1006	31	315
Okra	70	18	25	30000	4400	26000	3600	4.3	693	4	315
Ficus	72	25	31	18800	3900	28000	2300	3.1	554	159	57
Cabbage	40	23	20	5700	1450	29000	3750	2.8	5	0	2

Fe: iron; Mn: manganese; Zn: zinc; Ca: calcium; Mg: magnesium; K: potassium; S: sulphur; N: nitrogen.

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The factsheets are intended to provide information on some of the most nutritious leafy green vegetables suitable for growing in tropical areas.