

***Amorphallus* species – a review**
Anthony C. Dweck FLS FRSC FRSH.
Consultant, Dweck Data

INTRODUCTION

There are many species of *Amorphallus* and nearly all of them are used as a source of the unique starch contained in the roots.

DESCRIPTION

Flowers between December and March and the flowers are malodorous especially toward evening.

“A tuberous herb; tuber depressed-globose, 20-25 cm diameter, bulbiferous dark brown; leaves 1 or 2, appearing long after flowers, 30-90 cm broad ; segments spreading, simple or forked; leaflets 5-12.5 cm long of variable width, sessile, obovate or oblong strongly many-veined, with green edges ; petioles 60-90 cm long, stout, warted dark green with paler patches; flowers male and female, contiguous without neutral flowers in the spadix which is enclosed in a broad, campanulate spathe ; spathe 15-25 cm broad and as deep margin recurved, undulate and crisped, strongly and closely veined, greenish-pink external base within purple, rough and warted ; spadix as long as the spathe, appendage globose or shapeless sinuously lobulate, dark red purple and spongy within ; male part of the inflorescence towards the top, about 7.5 cm long, 2.5-5 cm diameter, anthers densely crowded, sessile pale yellow, opening by apical pores ; female part lower down 7.5 cm long and up to 62 cm diameter, ovaries densely crowded, sessile ; styles 1.2 cm long, stout, ascending purple stigmas large, 2 or 3-lobed ; fruit berries red, 2 or 3-seeded” [Jayaweera].

DISTRIBUTION

Largely cultivated throughout the plains of India, Ceylon, Malaya to Polynesia. In Ceylon, it is found commonly in the moist low-country un to 2000 feet altitude especially near the coast.

LOCAL NAMES

Beng: Ol. *Bind:* Zamin-kand; *Bik., Sul:* bagong. *Bis:* Anto, Oroi, Pamangkilon. *Bom., Mah. & Hin.* Jangli suran or alu; Madana masta; ol. *Burm. Wa. Can.* Suvarna-gadde. *Eng.* Telugu potato, Telinga Potato or Elephant's foot. *Hindi:* Kanda, Ol, Zaminkand; *Ibn:* bagang. *Ilk:* Tigi-nga-magmanto. *Sans:* Arsaghna (carer of piles); Kunda, Arshoghna, Bahukanda, Durnamari, Kanda, Kandala, Kandarha, Kandashurana, Kandi, Kandula, Kandvardhana, Kanthalla, Olla, Rutch-yakanda, Sthulakandaka, Sukandi, Surana, Suvitra, Tivrakantha, Vatari, Wanasurana, Wajira Kandhu. *Mah.:* Suran. *Mal.:* Kizhanna. *Pamp:* Tokod-banua. *Phil:* Pungapung. *Sinh:* Kidaran, Wal-kidaran; *Tag:* dpon; apong-apon; pungapung; *Tam:* Karuna, Sooran, Karuna kalang; Karakkaranai, Karunaikkalang, Karunaikkilhangu. *Tel.:* Thiya-kandha; Poti-kunda; Manchi-kunda-guddae.

COMPOSITION

The analysis of the corm has been reported: Moisture, 74.8%; ash, 0.73%; fat (ether extract), 0.38%; protein 5.1%; carbohydrates 18.4%; crude fibre 0.6% [Quisumbing]. The tuber contains an alkaloid, fat, protein and carbohydrates [Jayaweera].

Fresh plant contains 78.0% moisture: and the completely dried material contains ether extract 0.5%, albuminoids 12.2% (containing nitrogen 1.9%); soluble carbohydrates 76.3%, woody fibre 4.0%, and Ash 7.0% (containing sand 0.2%) respectively. Tubers contain an acrid juice [Nadkarni and Nadkarni].

MEDICINAL USES

Boils: The acrid roots are used medicinally to treat boils [Drury, Quisumbing, Jayaweera, Nadkarni and Nadkarni].

Carminative: It is a hot carminative in the form of a pickle [Quisumbing, Nadkarni and Nadkarni].

Emmenagogue: They are very caustic and abound in starch, and are employed as external stimulants, and are also emmenagogue [Nadkarni and Nadkarni].

Haemorrhoids: The tubers are considered useful in haemorrhoids [Quisumbing, Drury] and the roots and corms are used for the same condition [Jayaweera]. Useful in haemorrhoids, one of its Sanskrit synonyms being *Arsaghna* or curer of piles [Dey]. The acrid juice of the tubers should be removed by thorough boiling and washing so that it does not irritate the mouth; they are regarded good in haemorrhoids [Nadkarni and Nadkarni].

Miscellaneous conditions: In combination with other ingredients, the roots are used for preparations for the treatment of piles, acute dyspepsia, abdominal colic, elephantiasis, skin and blood diseases, fistula, glandular swellings in the neck urinary diseases and dropsy [Jayaweera].

Ophthalmia: The acrid roots are used to treat ophthalmia [Quisumbing, Jayaweera, Nadkarni and Nadkarni]

Rheumatism: The fresh roots or corms act as an acrid stimulant and expectorant, and are used externally in acute rheumatism. [Drury, Quisumbing, Jayaweera]. The corms are caustic, and are employed in anti-rheumatic poultices as rubefacients [Quisumbing]. The corm relieves the pain of rheumatic swellings when applied externally [Quisumbing]

Stomachic: In India the corm is stomachic and tonic [Nadkarni and Nadkarni]

Tonic: It is considered a restorative in dyspepsia, debility, etc [Nadkarni and Nadkarni].

Toothache: The crushed seed relieves tooth-ache [Jayaweera].

FOOD USE

Amorphophallus campanulatus Blume. Tropical Asia. It is the corm which gives the vegetable and which has the appearance of an elephant's foot. The corm, if stored well, keeps good for a considerable period. [Nadkarni and Nadkarni]. This plant is much cultivated, especially in the northern Circars, where it is highly esteemed for the wholesomeness and nourishing quality of its roots. The Telinga Potato is cooked in the manner of the yam and is also used for pickling. When in flower, the odour exhaled is most overpowering, resembling that of carrion, and flies cover the club of the spadix with their eggs. The root is very acrid in a raw state; it is eaten either roasted or boiled. At the Society Islands the fruit is eaten as bread, when bread-fruit is scarce and in the Fiji Islands is highly esteemed for its nutritive properties. The corm is eaten during periods of food scarcity [Jayaweera]. The *Amorphophallus campanulatus*, natural order Aroideae, is native to and cultivated throughout India and Ceylon for the sake of its tubers which are cooked and eaten by the natives like yams or potatoes [Dey]. The vegetable is considered nutritious and wholesome when cooked. It is boiled like potatoes and eaten with mustard ; or it is cooked in curries, or it is cut into slices, boiled with tamarind leaves, and made into pickles; it is also cooked in syrup and made into preserve. The plant, when dead and dry, is greedily eaten by cattle [Nadkarni and Nadkarni].

The petioles of young, unexpanded leaves are edible, when thoroughly cooked. When food is scarce, the corm is sometimes eaten. The leaves and corms are common feed for hogs.

The roots are very nutritious, on which account they are much cultivated for the purpose of diet. . They are planted in May, and will yield from 100 to 250 maunds per beegah, selling at the rate of a rupee a maund. The roots are also used for pickling. Wight says that "when in flower the fetor it exhales is most over-powering, and so perfectly resembles that of carrion as to induce flies to cover the club of the spadix with their eggs." A very rich soil, repeatedly ploughed, suits it best. The small tuberosities found in the large roots are employed for sets, and planted in the manner of potatoes. In twelve months they are reckoned fit to be taken up for use, the larger roots will then weigh from 4-8 or more pounds, and keep well if preserved dry. The natives employ them for food in the manner of the common yam. The plant is the *Chanah* or *Mullum chanah* of Rheede.— *Jury Rep. M. E. Roxb.* [Drury]

Amorphophallus konjac (rivieri) is a food species of Yunnan and Sichuan. It is grown in fields by upland farmers. Its tubers have received attention as a diabetes food. They contain "Konjac glucomannan" which is an excellent dietary fibre. This polysaccharide can reduce total cholesterol and blood glucose, leading to weight loss.

Another species *A. lyratus* Kunth is found in the East Indies, where the roots are eaten by the natives and are thought to be very nutritious. They require, however, to be carefully boiled several times and to be dressed in a particular manner in order to divest them of a somewhat disagreeable taste [Hedrick].

KONJAC FLOUR

Konjac flour is obtained from the tubers of various species of *Amorphophallus*. It is a soluble dietary fibre that is similar to pectin in structure and function.

Konjac flour consists mainly of a hydrocolloidal polysaccharide, glucomannan. Glucomannan is composed of glucose and mannose subunits linked with B-1,4 linkage at a molar ratio of 1:0.6. It is a slightly branched polysaccharide having a molecular weight of 200,000 to 2,000,000 daltons. Acetyl groups along the glucomannan backbone contribute to solubility properties and are located, on average, every 9 to 19 sugar units. In general, the konjac tuber is ground and milled, and its impurities are separated by either mechanical separation, water Wash, or aqueous ethanol wash to produce konjac flour.

PREPARATIONS

Powder, dose: 5 to 10 grains. Confection known as Laghu Suruna Madaka or Brihat Suran Madak containing Madanmust, treacle, trikatu and plumbago root, equal parts: dose: 1/2 to 2 drachms in dyspepsia [Nadkarni and Nadkarni].

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