

REFERENCES

Amorphophallus konjac
KONJAC

Quisumbing, Eduardo: Medicinal Plants of the Philippines. Katha Publishing Company. JMC PRESS, Quezon City, Philippines. 1978. ISBN No. unknown.

Genus *Amorphophallus* Blume

Amorphophallus campanulatus (Boxb.) Blume. PUNGAPUNG.
Arum campanulatum Roxb.
Arum decurrens Blanco
Amorphophallus decurrens Kunth

Local names: Anto (Bis.); dpon (Tag.); apong-pong (Tag.); bagang (Ibn.) ; bagong (Bik., Sul.) ; oroi (Bis.) ; pamangkilon (Bis.); pungapung (Tag.); tigi-nga-magmanto (Ilk.); tokod-banua (Pamp.).

Pungapung is commonly found in most, or all, provinces of Luzon and in Mindoro, in thickets and secondary forests, along roads, trails, etc., at low and medium altitudes in the settled areas. It also occurs in India through Malaya to Polynesia, Pungapung is a perennial, stemless herb. The corm is depressed-globose, up to 30 centimeters in diameter, flowering before leafing every year from the previous year's corm. The stemlike structure, which bears the lamina, is merely the petiole (1 meter or more high), radically developed from the corm. The leaves are usually solitary, with the blades up to 1 meter in diameter, trisected, the segments dichotomous, the ultimate ones pinnately divided into oblong to oblong-obovate, acuminate lobes. The spathe is sessile, broadly campanulate, dull-purplish, margins somewhat spreading or recurved, waved and crenulate, up to 30 centimeters in diameter. The spadix is hardly longer than the spathe, the appendage ovoid, variously sulcate or depressed. up to 16 centimeters long, foetid when in flower.

Hermano reports the analysis of the corm as follows: Moisture, 74.80 per cent; ash, 0.73 per cent; fat (ether extract), 0.38 per cent; protein, 5.10 per cent; carbohydrates, 18.37 per cent; crude fibre, 0.61 per cent. It gives 1,000 calories per kilo. In food value it is comparable to "kalabasa" and superior to "sinkamas."

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 raphide crystals, which occur on the corm, petiole, and leaves, produce irritation upon contact with the skin. According to Guerrero the corms are caustic, and are employed in anti-rheumatic poultices as rubefacients. Kirtikar and Basu, Chopra, Nadkarni, and Drury report that in India the corm is stomachic and tonic; used in piles and given as a restorative in dyspepsia, debility, etc. It is a hot carminative in the form of a pickle. The root is used for boils and ophthalmia and also as an emmenagogue. Dey also reports its use in haemorrhoids. Kirtikar and Basu 316 say the corm relieves the pain of rheumatic swellings when applied externally. When fresh it acts as an acrid stimulant and expectorant and is used in acute rheumatism. Dutt states that the tubers are considered serviceable in haemorrhoids.

Drury, Colonel Heber: The useful plants of India; with notices of their chief medicinal value in commerce, medicine and the arts. Higginbotham and Co. Madras. 1873. ISBN No. not available.

Amorphophallus campanulatus

MEDICAL USES.—The acrid roots are used medicinally in boils and ophthalmia. They are very caustic and abound in starch, and are employed as external stimulants, and are also emmenagogue. (*Lindley*.) The fresh roots act as an acrid stimulant and expectorant, and are used in acute rheumatism.— *Powell, Punj. Prod.*

ECONOMIC USES.—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 overpowering, 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 *Chaneh* or *Mullum chaneh* of Rheede.— *Jury Rep. M. E. Roxb.*

Hedrick, U.P. (editor): Sturtevant's Edible Plants of the World. Dover edition. New York. 1972. ISBN No. 0-486-20459-6.

Amorphophallus campanulatus Blume. Aroideae.

AMORPHOPHALLUS. TELINGA POTATO.

Tropical Asia. 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.

A. lyratus Kunth.

East Indies. 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.

Jayaweera, D.M.A.: Medicinal Plants used in Ceylon Part 1. National Science Council of Sri Lanka. Colombo 1981

Amorphophallus campanulatus (Roxb.) Blume ex Decne 3 : 366. 1834. (Fig. 60).

Amorphophallus chatty Andre — *Amorphophallus virosus* N. E. Br — *Candarium roxburghii* Schott — *Arum campanulatum* Roxb — *Arum decurrens* Wanco — *Amorphophallus decurrens* Kunth — *Dracontium polyphyllum* Willd.

Sinh: Kidaran, Wal-kidaran; **Tam:** Karunaikkalang, Karunaikkilangu. **Hindi:** Kanda, Ol, Zaminkand; **Sans:** Arsaghna, Arshoghna, Bahukanda, Durnamari, Kanda, Kandala, Kandarha, Kandashurana, Kandi, Kandula, Kandvardhana, Kanthalla, Olla, Rutch-yakanda, Sthulakandaka, Sukandi, Suvitra, Tivrakantha, Vatari, Wanasurana, Wajira Kandhu.

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.

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

DISTRIBUTION. Largely cultivated throughout the plains of India, Ceylon, Malaya to Polynesia. In Ceylon, it is found commonly in the moist low-country up to 2000 feet altitude especially near the coast ; extremely abundant between Galle and Matara.

COMPOSITION. The tuber contains an alkaloid, fat, protein and carbohydrates.

USES. The corm is used externally to relieve pain in acute rheumatism. With other ingredients, it is 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. The root is used for boils and ophthalmia. The corm, as well as the roots, are useful for haemorrhoids. The crushed seed relieves tooth-ache. The corm is eaten during periods of food scarcity.

Dey, Kanny Lall: The indigenous drugs of India - short descriptive notices of the principal medicinal plants met with in British India. 2nd edition. Thacker, Spink & Co. 1896. Calcutta. ISBN No. not available.

Amorphophallus campanulatus.
The Telinga Potato.

Vern.—**Beng:** Ol; **Bind:** Zamin-kand; **Sans :** Surana, olla; **Tam:** Karuna, sooran; **Telu:** Muncha-kunda.

The *Amorphophalus 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.

Medicinal use.—Useful in haemorrhoids, one of its Sanskrit synonyms being *Arsaghna* or curer of piles.

Burkill, H.M.: The useful plants of West Tropical Africa. Edition 2. Vol. 1. Families A-D. Royal Botanic Gardens Kew. 1985. ISBN No. 0-947643-01-X.

Amorphophallus abyssinicus (A. Rich.) N.E. Br.
FWTA,ed.2,3: 118. UPWTA,ed. 1,480.

A fleshy stemless plant with leaves arising from a tuber to 30cm high, spathe dark reddish purple, slender: of damp places in savanna from Ghana to W. Cameroon, and widespread in savanna in eastern Africa from Ethiopia to Rhodesia.

The root is eaten in Sudan (3) and in Tananyika (2) in time of shortage. It is used in N. Nigeria as a 'cure for delayed birth' (1) presumably to induce delivery.

References:

1. Leiy 159, K.. 2. Michelmores 1153, K. 3. Myers 13852, K.

Amorphophallus aphyllus (Hook.) Hutch.
FWTA ed.2,3:118.UPWTA,ed.1,480.

A fleshy stemless plant with leaves arising from a tuber about 5 cm across-spathe dark purple-red, to 30 cm high, leaves produced after flowering; occurring commonly in the soudano-guinean region from Senegal to Togo.

It is quite a spectacular plant and worthy of cultivation but for its unpleasant smell.

The tuber is eaten in time of dearth, but only after special treatment (1). In Senegal the tuber is dried and then boiled to remove acidity (2, 3). In Upper Volta the tuber is boiled in a vegetable-ash lye, then left in running water till the bitterness has disappeared (4). Its toxicity is such that it is considered in Upper Volta suitable for putting into arrow-poisons (4).

References:

1. Busson, 1965:517. 2. Dalziel, 1937. 3. Irvine, 1952, a: 29. 4. Kerharo & Bouquet, 1950:246.

Amorphophallus dracontoides (Engl.) N.E. Br.
FWTA, ed. 2,3: 118. UPWTA, ed. 1,480.

English: dragon's football (Morton).

A fleshy stemless plant with leaves arising from a stout tuber, appreciably larger than that of *A. aphyllus*; spathe a lurid mixture of purple, brown, grey olive on the outside,

and reddish-purple with white vertical lines inside (7) to about 30 cm long, appearing before the leaves; of seasonally wet land in the savanna, distributed south and to the east of *A. aphyllus* from Ghana to Nigeria.

The sap is intensely acrid (3) and causes skin-irritation (5). Saponins are present. The tuber can be eaten, but is considered only a famine-food. Special treatment is necessary to remove the acidity — slicing, repeated washing soaking and boiling for one or two day (1, 2, 4-6, 8). In N Nigeria the root is an occasional ingredient of some arrow-poisons (4). It is also considered a valuable remedy in asthmatic infections, and made into a paste it is applied topically to piles (1, a). It is perhaps also this species which is taken in N. Nigeria internally and externally to relieve acute rheumatism and sciatica, etc (1, b) and in S Nigeria to give to a woman during pregnancy to create a feeling of well-being till the time of her delivery: the corm is peeled and cooked with yam or plantain and fish with pepper and salt to taste; the woman will urinate off the otori, and feel at ease (9). The Fula of N Nigeria use the tuber in a medico-magical treatment for snake-bite: to an infusion of the cut-up tuber are added scrapings, and washings of a woman's hair oily with grease, etc and probably also other ingredients, and this concoction is given to the sufferers to drink (4).

Amorphophallus flavovirens N.E. Br.
FWTA, ed. 2,3:18.

English: yellow arum (Morton).

A fleshy stemless plant with leaves arising from a circular corm, flower-peduncle 30-60 cm long, spathe yellowish green 7-15 cm long, spadix sometimes to 30 cm long, yellow or flushed dark red, of deep rich soil in soudanian savanna-woodland, from Senegal throughout the Region, and extending into Gabon.

The plant is of attractive appearance, but with a revolting scent. It is recognized in Senegal as toxically dangerous (1).

Reference:

I. Kerharo & Adam, 1974: 200, 202, as *A. consimilis* Blume.

Amorphophallus johnsonii N.E. Br.
FWTA,ed.2;3: 118. UPWTA,ed. 1,480.

English; Johnson's arum (Morton).

A fleshy stemless plant with leaves arising from a corm to about 10 cm across, spathe dark purple-red to 7 cm long, spadix 30 cm, usually less, very occasionally more, peduncle even to over 1 m, of forest shade from Mali to S Nigeria.

It is a striking and attractive plant. The corm, like those of other *Amorphophallus* spp. is taken internally and applied topically in Ghana for snake-bite and acute rheumatism whereby the plant is called 'snake' by Akan people (1).

Reference:

1. Irvine, 1930:26.

Nadkarni, K.M., Nadkarni, A.K.: Indian Materia Medica - with Ayurvedic, Unani-Tibbi, Siddha, Allopathic, Homeopathic, Naturopathic and Home remedies. Vol.1. 1999. Popular Prakashan Private Ltd., Bombay, India. ISBN No. 81-7154-142-9.

Amorphophallus campanululatus or *A. sylvaticus*

Sans.—Arsaghna (carer of piles); Kunda. *Eng.* Telugu potato or Elephant's foot. *Bom., Mah. & Hin.* Jangli suran or alu; Madana masta; ol. *Ben. Ol. Burm. Wa. Tam.* Karuna kalang; Karakkaranai. *Tel.*—Thiya-kandha; Poti-kunda; Manchi-kunda-guddae. *Mal.* Kizhanna. *Mah.* Suran. *Can.* Suvarna-gadde.

Habitat: Bombay Presidency, India.

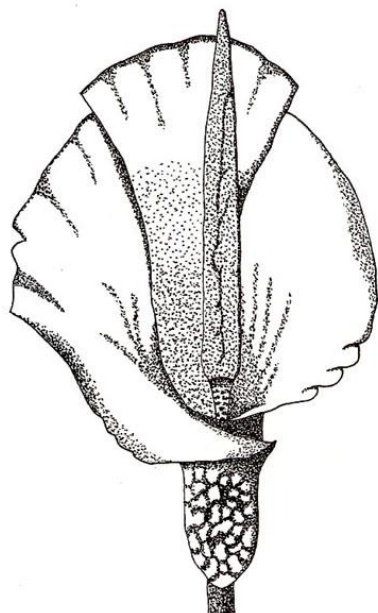
Parts Used: Corm or tubers : root.

Constituents: Fresh plant contains 78.00% moisture: and the completely dried material contains Ether Extract 0.50%, Albuminoids 12.18% (contg. Nitrogen 1.90%); soluble carbohydrates 76.28%, woody fibre 4.00%, and Ash 7.04% (contg. Sand 0.18%) respectively. Tubers contain an acrid juice.

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.

Action: Stomachic, carminative and tonic; used in piles and given as a restorative in dyspepsia, debility etc. 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. It is a hot carminative in the form of a pickle.

Uses: Root is used in boils and ophthalmia, also as an emmenagogue. Acrid juice of the tubers should be got rid of by thorough boiling and washing lest it otherwise irritate the mouth and fauces; they are regarded good in haemorrhoids. 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.



http://www.konnyaku.com/e_data/konjac2.html

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 1:6. 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. All processes are similar and result in a flour that is enriched in glucomannan and meets the specification listed in the Food Chemicals Codex.

Konjac flour has a long history of safe use. The first documented use of konjac tuber as a source of food in China and Japan was in the ancient Japanese written work entitled, "Man-you-shuu," which was edited in the sixth century AD. A comprehensive collection of historical materials, which reference konjac in novels, essays and poems, was published by the Japanese Konjac Society in April 1985. The collection of materials document that its use as food is deeply rooted in the lives and customs of the people in Japan and China for centuries. Historically, konnyaku, the alkali-treated konjac flour, was used to cleanse one's digestive tract of irritating and poisonous substances and keep one's internal organs clean. The konjac tuber was introduced into Hawaii in 1858 and konnyaku was commonly eaten as food once or twice a week by Japanese in Hawaii. Assuming a worst-case estimate of consumption for konnyaku once a week for eaters only, the estimated consumption of konnyaku as a food is 20 g/day.

The *Food Chemicals Codex* lists the current uses of konjac flour in the United States as a gelling agent, thickener, film former, emulsifier, and stabilizer. Assuming that konjac flour would replace all uses of pectin, modified pectin, and gelatin, a worst case estimate for konjac flour consumption as a food ingredient in finished foods would be 1.2 g/person/day. However, because use of konjac flour is self limiting and would not substitute for all uses of pectin and gelatin, a more reasonable estimate would be that konjac flour would substitute for one third of the uses and, thus, would be consumed at a level of about 0.4 g/person/day.

The major component of konjac flour. Feeding studies with rats and dogs indicate that the no-observed effect level for glucomannan was 2.5% of the diet. There are several studies which deal with the effects of glucomannan on aspects of the biochemical dynamics of cholesterol, triglyceride, phospholipid, bile acid, glucose and insulin in the experimental animals. While none of these studies can be called a safety study, they provide, some information on the safety of glucomannan in that they do not mention any adverse toxicological effects associated with the administration of glucomannan. These studies, in total, demonstrate that glucomannan has the ability to lower serum cholesterol levels and to delay glucose absorption.

Studies using glucomannan have been tested on humans, principally to study its influence on cholesterol and glucose absorption from the gastrointestinal tract. These studies indicate that glucomannan has the ability to lower serum cholesterol and may lower serum triglyceride and bile acid level as well. Glucomannan may also have an influence on glucose tolerance and glucose absorption. These findings have also been seen in the animal studies, mentioned above. While these studies cannot be deemed to

be human safety studies they do indicate that no adverse toxicological effects were associated with the administration of glucomannan.

In addition, the results from several in vitro iron absorption studies demonstrate that glucomannan, the major component of konjac flour, does not bind iron.

http://natureproducts.net/Forest_Products/Aroids/Amorphophallus_konjac.html

Amorphophallus konjac (A. rivieri)

Devil's tongue

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.

<http://www.drugdigest.org/DD/DVH/HerbsWho/0,3923,552514%7CKonjac,00.html>

Konjac

Scientific Name: Glucomannan

Other Names: Amorphophallus konjac, Devil's Tongue, Elephant-foot Yam, Konjac Mannan, Konnyaku, Snake Plant

Uses

Glucomannan is the Western name for vegetable fibres derived from an Asiatic plant family known as konjac. Glucomannan does not dissolve in water, but forms a thick, gooey gel when exposed to fluids. The body does not digest glucomannan, so the resulting large soft mass moves through the intestines and may trigger intestinal muscle contractions. Therefore, glucomannan is thought to be an effective bulk-type laxative, even though the process may take up to 12 hours.

http://florawww.eeb.uconn.edu/acc_num/198500882.html

Common Name: Devil's Tongue, Voodoo Lily

Family: [Araceae](#) Juss.

Country of Origin: Cochinchina, Vietnam, ?Sabah

Habitat:

Description: [*syn A. rivieri; Proteinophallus Rivieri*]

Much grown from Indonesia to Japan for edible corms.

Tuber about 10 in. across, flattish round. *l. stalk* 15 to 30 in. long, brownish green spotted white; blade large, 3-sect, ultimate segs. oblong-elliptic, cuspidate. *Peduncle* 2 ft. long. *Spathes* 8-12" long, ovate, tube about 3" long, pale green with greenish white spots, margin purplish, blade 8" long, wide roundish-cordate, acute, green without, dark purple within, margin undulate.

Note: A specimen cultivated in EEB Greenhouse / Garden by Matt Opel yielded a 17kg, 40cm diameter tuber in Fall 1998. The image to the right (same tuber -last year) is REAL SIZE and the tuber is significantly larger this year. We will photograph this monster again in February when it blooms and update this image.

It is very popular in Japan as a cooking supplement for soups and stew-like dishes. The tuber are raised and then cooked (usually cooking is also done on a commercial basis) or reduced to a substance somewhat stiffer than gelatin. The resultant material is pressed into blocks and sold like tofu in the grocery stores. The Japanese pronounce it cone-yuk. The name *Amorphophallus* is not generally associated with the product to the lay person.

The main substance in konjac is called Glucomannan which has a low caloric content but is rich in dietary fibre. Clinical study indicates the Glucomannan may be responsible for weight reduction and reducing cholesterol in those who have high cholesterol. It is eaten in Japan to clean the digestive tract of toxins.

<http://www.drugdigest.org/DD/DVH/HerbsWho/0,3923,552514%7CAmorphophallus+konjac,00.html>

Amorphophallus konjac

Scientific Name: Glucomannan

Other Names: Devil's Tongue, Elephant-foot Yam, Konjac, Konjac Mannan, Konnyaku, Snake Plant

Who is this for?

Uses

Glucomannan is the Western name for vegetable fibres derived from an Asiatic plant family known as konjac. Glucomannan does not dissolve in water, but forms a thick, gooey gel when exposed to fluids. The body does not digest glucomannan, so the resulting large soft mass moves through the intestines and may trigger intestinal muscle contractions. Therefore, glucomannan is thought to be an effective bulk-type laxative, even though the process may take up to 12 hours.

Glucomannan has also been studied for treating obesity, diabetes, and high cholesterol. Studies in both adults and children with severe obesity showed varying degrees of weight loss associated either with taking supplemental glucomannan or with replacing some of the usual diet with foods made from konjac flour – the dried and ground tuber (underground stem) of the plant. Generally, it is believed that glucomannan discourages overeating because it creates a feeling of fullness that persists because the fibre in it swells and stomach contents stay in the stomach longer. In most of the research studying glucomannan for weight loss, participants also drank increased quantities of water and followed a reduced-calorie diet.

Possibly due to the same delay in stomach emptying, glucomannan may improve blood sugar levels in individuals with diabetes. Because the absorption of carbohydrates from foods is slower when glucomannan is taken, blood sugar levels may not rise as high or as fast as usual. Some preliminary results from animal studies also suggest that glucomannan may increase the sensitivity of body tissues to the insulin that is produced or taken. In several studies, taking glucomannan has also

appeared to lower blood levels of total cholesterol, low-density lipoproteins (LDL, or “bad” cholesterol), and triglycerides. Although more research on this possible use of glucomannan is needed, it is believed that glucomannan may increase the elimination of cholesterol and its components from the body. It may also keep bile acids from being reabsorbed in the intestines, further reducing cholesterol levels in the blood.

Amorphophallus konjac

Scientific Name: Glucomannan

Other Names: Devil’s Tongue, Elephant-foot Yam, Konjac, Konjac Mannan, Konnyaku, Snake Plant

References

Anon. Glucomannan. In: DerMarderosian A, Beutler JA, eds. Facts and Comparisons: The Review of Natural Products. St. Louis, MO, Facts and Comparisons. August 1995.

Anon. Evaluation of certain food additives and contaminants. Forty-sixth report of the Joint FAO/WHO Expert Committee on Food Additives. World Health Organization Technical Reporting Service. 1997;868:i-viii and 1-69.

Arvill A, Bodin L. Effect of short-term ingestion of konjac glucomannan on serum cholesterol in healthy men. American Journal of Clinical Nutrition. 1995;61(3):585-589.

Cairella M, Marchini GAD. Evaluation of the action of glucomannan on metabolic parameters and on the sensation of satiation in overweight and obese patients. [Article in Italian] Clinical Therapeutics. 1995;146(4):269-274.

Chen HL, Sheu WH, Tai TS, Liaw YP, Chen YC. Konjac supplement alleviated hypercholesterolemia and hyperglycemia in type 2 diabetic subjects--a randomized double-blind trial. Journal of the American College of Nutrition. 2003;22(1):36-42.

Huang CY, Zhang MY, Peng SS, et al. Effect of Konjac food on blood glucose level in patients with diabetes. Biomedical and Environmental Science. 1990;3(2):123-131.

Jellin JM, Gregory P, Batz F, Hitchens K, et al, eds. Pharmacist's Letter/Prescriber's Letter. Natural Medicines Comprehensive Database, 3rd Edition. Stockton CA: Therapeutic Research Facility, 2000.

Joint FAO/WHO Expert Committee on Food Additives (JECFA). Konjac flour. Food Additives (uses other than as flavouring agents) Database. Available at: http://apps3.fao.org/jecfa/additive_specs/docs/4/additive-0623.htm Accessed September 23, 2003.

Livieri C, Novazi F, Lorini R. The use of highly purified glucomannan-based fibres in childhood obesity. [Article in Italian] Pediatric Medicine and Surgery. 1992;14(2):195-198.

Mao CP, Xie ML, Gu ZL. Effects of konjac extract on insulin sensitivity in high fat diet rats. Acta Pharmacol Sin. 2002;23(9):855-859.

- Shima K, Tanaka A, Ikegami H, Tabata M, Sawazaki N, Kumahara Y. Effect of dietary fibre, glucomannan, on absorption of sulfonylurea in man. *Hormone and Metabolic Research*. 1983;15(1):1-3.
- Shimizu H, Yamauchi M, Kuramoto T, Kubota N, Matsuda M, Hoshita T. Effects of dietary konjac mannan on serum and liver cholesterol levels and biliary bile acid composition in hamsters. *Journal of Pharmacobiodynamics*. 1991;14(7):371-375.
- Talt M. Wild, wonderful aroids – part 3 – amorphophallus. In: Talt M, ed. *Gardening in Shade*. Suite 101. December 2, 2002. Available at: <http://www.suite101.com/article.cfm/222/96575>. Accessed September 23, 2003.
- Vido L, Facchin P, Antonello I, Gobber D, Rigon F. Childhood obesity treatment: double blinded trial on dietary fibres (glucomannan) versus placebo. *Pediatr Padol*. 1993;28(5):133-136.
- Vita PM, Restelli A, Caspani P, Klinger R. Chronic use of glucomannan in the dietary treatment of severe obesity. [Article in Italian] *Minerva Med*. 1992;83(3):135-139.
- Vuksan V, Jenkins DJ, Spadafora P, et al. Konjac-mannan (glucomannan) improves glycemia and other associated risk factors for coronary heart disease in type 2 diabetes. A randomized controlled metabolic trial. *Diabetes Care*. 1999;22(6):913-919.
- Vuksan V, Sievenpiper JL, Owen R, et al. Beneficial effects of viscous dietary fibre from konjac-mannan in subjects with the insulin resistance syndrome: results of a controlled metabolic trial. *Diabetes Care*. 2000;23(1):9-14.
- Vuksan V, Sievenpiper JL, Xu Z, et al. Konjac-mannan and American ginseng [sic]: emerging alternative therapies for type 2 diabetes mellitus. *Journal of the American College of Nutrition*. 2001;20(5 Suppl):370S-383S.
- Walsh DE, Yaghoubian V, Behforooz A. Effect of glucomannan on obese patients: a clinical study. *International Journal of Obesity*. 1984;8(4):289-293.
- Wang Z, Yang L, Liu H, Tan X. Effects of refined konjac meal on lipid metabolism and blood viscosity of rats fed by high fat forage. [Article in Chinese] *Wei Sheng Yan Jiu*. 2002;31(2):120-121.
- Wu J, Peng SS. Comparison of hypolipidemic effect of refined konjac meal with several common dietary fibres and their mechanisms of action. *Biomedical and Environmental Science*. 1997;10(1):27-37.
- Zhang MY, Huang CY, Wang X, Hong JR, Peng SS. The effect of foods containing refined Konjac meal on human lipid metabolism. *Biomedical and Environmental Science*. 1990;3(1):99-105.

<http://www.suite101.com/article.cfm/3311/24184>

If you can get past the unmistakable stench of this unique plant, it is definitely one to try growing. Although the average height of the inflorescences of this plant is six and a half feet, although the tallest one on record was a whooping 10.75 foot. Once the tuber has matured underground, it will begin to produce a huge aroid bloom that

generally is taller than most humans. The spadix grows rapidly once it begins, although in the beginning the spadix will be completely enclosed by the spathe and bracts. The *Amorphophallus* is considered to be the largest unbranched inflorescence in the world.

Although the *Amorphophallus Titanum* was once rumored to eat its grower, we all know today that that's just an old wives tale. However, it is difficult to propagate because the tubers are prone to rot, it does not reliably increase its size nor does it produce seeds or offsets as easily as other species of *Amorphophallus*. Now, if the idea of a man eating plant isn't enough of a shock to you, try the idea of elephants pollinating the monstrous inflorescences! The truth of the matter is that large carrion beetles are lured by the horrendous odor of decaying flesh, or as one person puts it, rotten liver! Indonesian people commonly call it bunga bankai, which means corpse flower!

The true reason why *Amorphophallus* have a hard time reproducing is because the female flowers are the first to open and before the male florets begin to produce their pollen, the female flowers are no longer receptive. In rare occasions in the wild, pollination will occur only because of the fact that *Amorphophallus* can set bloom any time of the year, and there is a slight chance that one may be in its female cycle while another has entered into its male cycle.

If you decide to try growing *Amorphophallus* species, be aware that spider mites will attack emerging seedlings, and that aphids are also moderately fond of this plant. You should also note that low humidity or low light may cause the leaflets to partially desiccate. Although a plus of low light will be a dark green leaf with contrasting pink margins, thus a gradual move of this plant into bright light will produce bright green leaves with pinkish margins that are less noticeable.

Another surprise about the *Amorphophallus* is the fact that the *Amorphophallus Rivieri* 'Konjac' also known as the Japanese Konjaku, and the *Amorphophallus Campanulatus* also known as the Asian Elephant Yam both have edible roots and that is their prime purpose of being grown.

The dormant tubers of the *Amorphophallus* species should be planted in late winter or early spring in the ground where weather conditions are favorable for it to grow outdoors year round, otherwise, plant it in a pot and keep it indoors. The tubers should be planted four inches deep, and grown in warm, barely moist conditions with frequent waterings and a balanced liquid fertilizer applied monthly during the rapid growing season. The larger the size of the tuber, the greater the chance that it will bloom.

If you are the really adventurous type, you can always try your hand at sowing *Amorphophallus* seed in autumn or spring once the temperatures are ranging in the sixty-six to seventy-seven degree Fahrenheit range. Another method of propagation is to separate the offsets when the plant is dormant.

If you can get past the horrendous smell of these plants, they are definitely one of the weirdest plants you will grow in your garden and they will certainly attract a crowd once they bloom which could be a slow process.

http://www.kobakoba.co.uk/amorphophallus_konjac.htm

This plant used to be called *A. rivieri* and some books still refer to it as *A. rivieri* 'Konjac'. It has a rather dark-blotched petiole and a dark green leaf lamina. The lamina canopy is usually held slightly stiffly rather like an umbrella blown out by the wind. *Amorphophallus konjac* is hardy enough to be used as summer bedding but if so needs to be surrounded by low growing plants so that the dramatic effect of the leaf is not spoiled either visually or physically. The corms are sufficiently hardy to pass through the winter in many parts of the UK but it is probably best to lift them in the autumn after the foliage has died down and store them dry through the winter. The corms can become very large. Our biggest has a diameter of 20 cm and weighs over 3kg. When corms are flowering size the inflorescence emerges before the leaf in early spring and remarkably, the corm completes flowering even before roots develop. The inflorescence is magnificent although smelly. The mottled peduncle rises to 70 cm supporting the red-brown spathe, which cups the purple spadix that rises a further 70 cm. The corm shrinks considerably during flowering as reserves are mobilised to the inflorescence. After a couple of weeks the inflorescence collapses and the corm, so to speak, goes back to sleep for about 4 weeks before the leaf finally emerges in late spring.

Amorphophallus konjac was cultivated in China 1500 years ago and the practice spread to Japan, historically for food (flour for noodles and a jelly called "konjaku") but increasingly as a feedstock for the food processing and pharmaceutical industries. The corms are a source of a carbohydrate, mannan that can be used as a thickening agent and the sugar mannose used in diabetic foods. Although *Amorphophallus konjac* can be an edible plant, we do not recommend our clone for eating; some clones are rich in poisonous calcium oxalate. It is anyway much better enjoyed as a spectacular ornamental!

<http://translate.google.com/translate?hl=en&sl=es&u=http://www.fitoterapia.net/vademecum/plantas/693.html&prev=/search%3Fq%3DAmorphophallus%2Bkonjac%26start%3D40%26hl%3Den%26lr%3D%26ie%3DUTF-8%26sa%3DN>

Used Part

Rhizome is used to obtain the glucomannan – a therapeutic substance

Active Principles

The drug contains abundant polysaccharides of the glucomannan type, constituted by chains of manose united by means of connections beta-1,4 and replaced in C-3 by units of D-manose or D-glucose (relation glucose:manose = 1:1,6). Also heterosides of the 3,4-dihydroxibenzaldehyde one has been described.

Pharmacological Action

- the glucomannan with a great capacity of water absorption, forms a very thick gel that causes a satiety sensation and, therefore, a diminution of the appetite.
- experimental and clinical Studies have shown a reduction of the cholesterol levels LDL.
- Laxative smooth.

Indications

Preparations that contains the glucomannan is used like helping in hypocaloric regimes for the treatment of the overweight, and in the control of

hypercholesterolemia. Also constipation cases of and diarrhoea can be used in, to regularize the intestinal function.

Contraindications

Esofágica, pilórica Estenosis or intestinal.

One is due to consider that can reduce the absorption of other medicines.

Indirect effect

It can produce flatulence.

Precaution/Poisonings

They have not been described.

Galenical Forms/Dosage

The glucomannan of konjac in powder form is used:

- 1-2 capsules of 500-750 mg accompanied by two or more glasses of water or juice half an hour before the meals.

- 1 on of 1500 mg, diluted in a juice glass of fruits. To take half an hour before the meals, to take next one or two glasses from water.

To administer by oral route, accompanied of abundant liquid, being recommendable, in addition, to maintain a contribution of additional liquid during the day.

<http://plantsdatabase.com/go/51598/>

Grown as a food crop in parts of the world; leaf stalk is mottled pink with green, very beautiful unusual foliage. Mature tubers can weigh up to 50 lbs.

http://www.pdrhealth.com/drug_info/nmdrugprofiles/nutsupdrugs/glu_0121.shtml

Glucomannan

DESCRIPTION

Glucomannan is a hydrocolloidal polysaccharide comprised of D-glucose and D-mannose residues (hence, the name) bonded together in beta-1,4 linkages.

Approximately 60% of the polysaccharide is made up of D-mannose and approximately 40%, of D-glucose. Some of the sugar residues in glucomannan are acetylated. The molecular weight of this slightly branched polysaccharide ranges from 200 kilodaltons to 2,000 kilodaltons.

Glucomannan, which is also classified as a soluble dietary fibre, is derived from konjac flour. Konjac flour itself is derived from the *Amorphophallus* species, plants which are related to the common philodendron house plant and which grow in only certain parts of the world, including some regions in China and Japan. One member of the *Amorphophallus* genus called *Amorphophallus konjac*, is also known as voodoo lilly, devil's tongue and konjac. Konjac flour, however is derived from the tubers of various species of *Amorphophallus*, and the term konjac is used generically for the various species, as well as for the flour from their tubers. In addition to being known as konjac, the plant is called ju ruo (pronounced in Chinese) by the Chinese people, and called konjaku or konnyaku by the Japanese.

Konjac flour has a long history of use in both China and Japan as a food substance and as a folk remedy. Glucomannan products are widely used in Japan and China as general health aids, topically, for skin care and as a thickening agent for foods, among other things. Glucomannan, sometimes called konjac mannan, is marketed in the United States as a dietary supplement. Polysaccharides containing D-mannose and D-glucose in similar proportions to that found in konjac flour are found in other organisms, such as certain yeasts. Yeast glucomannan is not marketed as a dietary supplement.

ACTIONS AND PHARMACOLOGY

ACTIONS

Glucomannan may have laxative activity. It may also have activity in the control of serum glucose and lipid levels. Glucomannan has putative bariatric activity.

MECHANISM OF ACTION

The laxative effect of glucomannan is thought to be due to the swelling of glucomannan with consequent increase in stool bulk.

Some studies indicate that glucomannan may improve glycemic control in Type 2 diabetics. The mechanism of this effect is unclear. Glucomannan may delay the absorption of carbohydrates by increasing gastric-emptying time and/or decreasing small intestinal transit time.

The mechanism of glucomannan's possible hypocholesterolemic activity is likewise, unclear. The polysaccharide may stimulate the conversion of cholesterol to bile acids, as well as the fecal excretion of bile acids. Glucomannan may also decrease the intestinal absorption of cholesterol.

The putative bariatric (weight reduction) effect of glucomannan is not well understood. The swelling of glucomannan that occurs when it absorbs water in the gastrointestinal tract, may confer a feeling of satiety in some.

PHARMACOKINETICS

Following ingestion of glucomannan, very little of it is digested in the small intestine. Glucomannan is resistant to hydrolysis by the digestive enzymes. Significant degradation occurs in the large intestine via the action of colonic bacteria. Products of degradation in the large intestine, include formic acid, acetic acid, butyric acid, propionic acid, beta-1,4- D-mannobiose (4-O-beta-D-mannopyranosyl-D-mannopyranose), cellobiose(4-O-beta-D-glucopyranosyl-D-glucopyranose), 4-O-beta-D-glucopyr-anosyl-D-mannopyranose, glucose and mannose. There may be some absorption of these degradation products from the large intestine. Most of them are excreted in the faeces, along with unchanged glucomannan. Butyrate is used as a respiratory fuel by the colonocytes.

INDICATIONS AND USAGE

INDICATIONS

Glucomannan has demonstrated some usefulness in the management of obesity, diabetes and constipation. It has some favorable effects on lipids.

RESEARCH SUMMARY

Some studies have demonstrated that glucomannan has some efficacy in the management of obesity. In an eight-week, double-blind study, 20 obese subjects received 1 gram of glucomannan or placebo daily. Subjects were instructed not to change eating or exercise habits. Glucomannan-supplemented subjects had a significant mean weight loss of 5.5 pounds. Serum cholesterol and LDL cholesterol were significantly reduced, as well, in the treated group.

In a double-blind trial, this one involving 60 children under age 15 with childhood obesity, there was a significant reduction in weight in both treated and placebo groups. Further, there was a concomitant significant reduction in alpha-lipoprotein and an increase in triglycerides in the treated group but not in the placebo group. However, in another controlled study of childhood obesity, excess weight and triglycerides were significantly decreased in treated subjects but not in controls.

In a 3-month study of severely obese patients, a hypocaloric diet therapy by itself was tested against the same hypocaloric diet in combination with 4 grams of glucomannan (in three doses) daily. The combination therapy resulted in more significant weight loss in relation to fatty mass alone, in an overall improvement in lipid status and carbohydrate tolerance and a greater adherence to the diet. The researchers concluded: "Due to the marked ability to satiate patients and the positive metabolic effects, glucomannan diet supplements have been found to be particularly efficacious and well tolerated even in the long-term treatment of severe obesity."

Glucomannan, given in a long-term feeding program to baboons, showed beneficial effects on glucose homeostasis. Subsequently, it was shown that 2.6-grams and 5.2-grams daily doses of glucomannan, added to a carbohydrate rich breakfast in eight patients with previous gastric surgery, improved their reactive hypoglycemia and decreased the postprandial rise in plasma insulin. Benefits were achieved without unpalatability and carbohydrate malabsorption.

In a recent randomized, placebo-controlled metabolic trial, glucomannan was found to improve metabolic control in high-risk Type 2 diabetic patients, as measured by glucose and lipid levels and blood pressure. More research is warranted.

Several studies have demonstrated that glucomannan is an effective treatment for many with chronic constipation. This has been demonstrated in double-blind, placebo-controlled and multicenter studies. One to 4 grams daily, in divided doses, are typically used in these studies of constipation.

CONTRAINDICATIONS, PRECAUTIONS, ADVERSE REACTIONS

CONTRAINDICATIONS

Glucomannan is contraindicated in those hypersensitive to any component of a glucomannan-containing product. It is also contraindicated in those with intestinal obstruction, difficulty in swallowing and esophageal narrowing.

PRECAUTIONS

Pregnant women and nursing mothers should avoid glucomannan supplements.

Glucomannan must be taken with adequate amounts of fluids. Inadequate fluid intake may cause glucomannan to swell and block the throat, esophagus or intestines.

Tablet forms of glucomannan should be avoided.

Glucomannan should not be taken before going to bed.

Type 2 diabetics who use glucomannan, may require adjustment of their antidiabetic medications.

ADVERSE REACTIONS

A few cases of esophageal obstruction have been reported with the use of glucomannan tablets. The most common adverse reactions are flatulence and abdominal distension. Diarrhea is occasionally reported.

INTERACTIONS

NUTRITIONAL SUPPLEMENTS

Fat-soluble vitamins (A, D, E, K): Concomitant intake of fat soluble vitamins and glucomannan may decrease the absorption of the fat-soluble vitamins.

FOODS

Glucomannan may decrease the absorption of fat-soluble vitamins found in foods.

OVERDOSAGE

Glucomannan overdosage has not been reported.

DOSAGE AND ADMINISTRATION

Glucomannan supplements are mainly available in capsules. Glucomannan powder is also available and there are glucomannan combination products.

Doses used range from one to four grams daily, taken in divided doses and with plenty of liquids.

LITERATURE

Arvill A, Bodin L. Effect of short-term ingestion of konjac glucomannan on serum cholesterol in healthy men. *Am J Clin Nutr.* 1995; 61:585-589.

Doi K, Matsuura M, Kawara A, et al. Influence of dietary fibre (konjac mannan) on absorption of vitamin B₁₂ and vitamin E. *Tohoku J Exp Med.* 1983; 141 Suppl:677-681.

Henry DA, Mitchell AS, Aylward J, et al. Glucomannan and risk of oesophageal obstruction. *Br Med J.* 1986; 292:591-592.

Hopman WP, Houben PG, Speth PA, Lamers CB. Glucomannan prevents postprandial hypoglycemia in patients with previous gastric surgery. *Gut*. 1988; 29:930-934.

Hou YH, Zhang LS, Zhou HM, et al. Influences of refined konjac meal on the levels of tissue lipids and the absorption of four minerals in rats. *Biomed Environ Sci*. 1990; 3:306-314.

Livieri C, Novazi F, Lorini R. [The use of highly purified glucomannan-based fibres in childhood obesity]. [Article in Italian]. *Pediatr Med Chir*. 1992; 14:195-198.

Matsuura Y. Degradation of konjac glucomannan by enzymes in human feces and formation of short-chain fatty acids by intestinal anaerobic bacteria. *J Nutr Sci Vitaminol (Tokyo)*. 1998; 44:423-436.

Melga P, Giusto M, Ciuchi E, et al. [Dietary fibre in the dietetic therapy of diabetes mellitus. Experimental data with purified glucomannans]. [Article in Italian]. *Riv Eur Sci Med Farmacol*. 1992; 14:367-373.

Passaretti S, Franzoni M, Comin U, et al. Action of glucomannans on complaints in patients affected with chronic constipation: a multicentric clinical evaluation. *Ital J Gastroenterol*. 1991; 23:421-425.

Staiano A, Simeone D, Del Giudice E, et al. Effect of the dietary fibre glucomannan on chronic constipation in neurologically impaired children. *J Pediatr*. 2000; 136:41-45.

Venter CS, Vorster HH, Van der Nest DG. Comparison between physiological effects of konjac-glucomannan and propionate in baboons fed "Western" diets. *J Nutr*. 1990; 120:1046-1053.

Vido L, Facchin P, Antonello I, et al. Childhood obesity treatment: double blinded trial on dietary fibres (glucomannan) versus placebo. *Pediatr Padol*. 1993; 28:133-136.

Vita PM, Restelli A, Caspani P, Klinger R. [Chronic use of glucomannan in the dietary treatment of severe obesity]. [Article in Italian]. *Minerva Med*. 1992; 83:135-139.

Vorster HH, De Jager J. The effect of the long-term ingestion of konjac-glucomannan on glucose tolerance and immunoreactive insulin values of baboons. *S Afr Med J*. 1984; 65:805-808.

Vuksan V, Jenkins DJ, Spadofora P, et al. Konjac-mannan (glucomannan) improves glycemia and other associated risk factors for coronary heart disease in Type 2 diabetes. A randomized controlled metabolic trial. *Diabetes Care*. 1999; 22:913-919.

Vuksan V, Sievenpiper JL, Owen R, et al. Beneficial effects of viscous Konjac-mannan in subjects with the insulin resistance syndrome. *Diabetes Care*. 2000; 23:9-14.

Walsh DE, Yaghoubian V, Behforooz A. Effect of glucomannan on obese patients: a clinical study. *Int J Obesity*. 1984; 8:289-293.

<http://food.oregonstate.edu/gums/konjac.html>

Konjac & glucomannan: top viscoisty (over 16,000 cps by USA method) alcohol washed grade avaialbe from local stock, with low odor and white color.

Konjac flour is ground dried root of the konjac plant. The interesting portion of this is the Konjac mannan. It is a random copolymer of α -1,4 linked D-mannose and D-glucose in the ratio 3:2 and is randomly substituted with acetyl groups at unknown positions at approximately 1 in 15 of the sugar residues.

Konjac mannan is used as a thickening agent and also forms gels in the presence of mild alkali. The use of this as a thickening agent is interesting in that you generally have to "break" the sacs that the konjac mannan is within.

Amorphophallus konjac is the perennial herb whose tubers are dried, pulverized and winnowed to prepare konjac flour.

Composition: Consists of mannose and glucose in 3:2 ratio with beta 1,4-linkages at 300,000 daltons. Acetyl groups scattered randomly along linear molecules at 1/19 glucocse-mannose units.

Solubility in cold water: difficult but possible. When mixed small sacs absorb moisture and swell and eventually burst releasing glucomannan. Is a slow hydration rate dependent on temperature, time and mixing.

Synergism with gums: Interacts with kappa carrageenan to form elastic, thermally reversible gel after heating and cooling Interacts with xanthan gum to form gel

Others: hydration time/temperature dependent

Comments: This is an unique hydrocolloid. Essentially the flour consists of fine oval whitish saces [100 to 500 microns in size] which swell in water to form a water-soluble aggregated glucomannan. When hydrated it is a mixture that has optimum viscosity. This also will behave synergistically with kappa carrageenan and xanthan gum. The biggest advantage is that this gel becomes more thermally stable upon heating. This is why it is useful for use as a fat replacer in hamburger. As a fat replacer it gives the body and mouthfeel of fat and yet not the calories. Additionally, it remains in the burger when fried. Because of its functional interaction with most starches, it is used with a variety of reduced fat foods and pasta products.