

Acacia gum (Acacia Nilotica)

# Acacia (Gum)

**Botanical: Acacia nilotica (LINN.)**

**Family: N.O. Leguminosae**

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**---Part Used---**Gummy Exudation from stem.

**ACACIA NILOTICA (LINN.)** All the gum-yielding Acacias exhibit the same habit and general appearance, differing only in technical characters. They are spiny shrubs or small trees, preferring sandy or sterile regions, with the climate dry during the greater part of the year.

The gum harvest from the various species lasts about five weeks. About the middle of November, after the rainy season, it exudes spontaneously from the trunk and principal branches, but the flow is generally stimulated by incisions in the bark, a thin strip, 2 to 3 feet in length and 1 to 3 inches wide being torn off. In about fifteen days it thickens in the furrow down which it runs, hardening on exposure to the air, usually in the form of round or oval tears, about the size of a pigeon's egg, but sometimes in vermicular forms, white or red, according to whether the species is a white or red gum tree.

About the middle of December, the Moors commence the harvesting. The masses of gum are collected, either while adhering to the bark, or after it falls to the ground, the entire product, often of various species, thus collected, is packed in baskets and very large sacks of tanned leather and brought on camels and bullocks to the centres of accumulation and then to the points of export, chiefly Suakin, Alexandria, or - in Senegambia - St. Louis. It is then known as 'Acacia sorts,' the term being equivalent to 'unassorted Acacia.' The unsorted gums show the widest variation as to size of fragments, whiteness, clearness, freedom from adhering matter, etc. It is next sorted or 'picked' in accordance with these differences.

There are many kinds of Acacia Gum in commerce:

**KORDOFAN CUM**, collected in Upper Egypt and the Sudan, in Kordofan, Dafur and Arabia, and exported from Alexandria, is considered the best and is the kind generally used in pharmacy. It consists of small, irregular pieces, commonly whitish, or slightly tinged with yellow, and is freer from impurities than most other commercial varieties. But those known in commerce as 'Turkey sorts' and 'Trieste picked,' which are brought from the Sudan by way of Suakin, are equally suitable for medicinal use.

**SENEGAL GUM**, of two varieties, produced by two different trees, one yielding a white, the other a red gum, is usually in roundish or oval unbroken pieces of various sizes, larger than those of Turkey Gum, less brittle and pulverizable, less fissured and often occurs in long, cylindrical or curved pieces.

The term 'Gum Senegal' is not, strictly speaking, synonymous with Gum Acacia, though it is commonly so used. Gum Acacia is the name originally pertaining to Sudan, Kordofan or Egyptian (hashabi) Gum, which possesses properties rendering it superior and always preferred to any other known to commerce. During the political and military disturbances in Egypt between 1880 and 1890, this gum became so nearly unobtainable that occasional packages only were seen in the market. Among the many substitutes then offered, the best was Gum Senegal, which was adopted as the official equivalent of Gum Acacia. In this way, it came about that the names were regarded as synonymous. In 1890, the original Acacia again came into the market and eventually became as abundant as ever, but it is no longer possible to entirely separate the two names. Most of the characteristically distinct grades of Acacia Gum are now referred to particular species of the genus Acacia. Most works state that both the Kordofan and Senegal Gums are products of *A. Senegal* (Willd.), the range of which is thus given as Senegambia in West Africa, the Upper Nile region in Eastern Africa, with more or less of the intervening central region.

*A. glaucophylla* (Staud.) and *A. Abyssinica* (Hochst.) are said to yield an equally good gum, but little of it is believed to reach the market.

*Mogadore Gum*, from *A. gummifera* (Willd), a tall tree found in Morocco and in the Isle of Bourbon, occurs in rather large pieces, closely resembling Kordofan Gum in appearance.

*Indian Gum*, the product of *A. arabica*, the Gum Arabic tree of India. The gum of this and other Indian species of Acacia is there used as a substitute for the official Gum Acacia, to which it is, however, inferior. Indian Gum is sweeter in taste than that of the other varieties, and usually contains portions of a different kind of gum.

*Cape Gum* is also imported. It is of a pale yellow colour and is considered of inferior quality.

*AUSTRALIAN GUM*, imported from South Australia, is in elongated or globular pieces, rough and even wrinkled on the surface and of a violet tint, which distinguishes it from other varieties. It is not entirely soluble in water, to which it imparts less viscosity than ordinary Gum Acacia. It frequently contains tannin.

Gum Acacia for medicinal purposes should be in roundish 'tears' of various sizes, colourless or pale yellow, or broken into angular fragments with a glass-like, sometimes iridescent fracture, often opaque from numerous fissures, but transparent and nearly colourless in thin pieces; taste insipid, mucilaginous; nearly inodorous. It should be almost entirely soluble in water, forming a viscid neutral solution, or mucilage, which, when evaporated, yields the gum unchanged. It is insoluble in alcohol and ether, but soluble in diluted alcohol in proportion to the amount of water present. It should be slowly but completely soluble in two parts of water: this solution shows an acid reaction with litmuspaper. The powdered gum is not coloured blue (indicating absence of starch) or red (indicating absence of dextrin) by the iodine test solution. It should not yield more than 4 per cent of ash.

**---Adulteration---**Adulteration in the crude state is confined almost wholly to the addition of similar and inferior gums, the detection of which requires only familiarity with the genuine article.

In the ground condition it is adulterated oftenest with starch and dextrans, tests for which are given in the official description. Tannin is present in inferior gums and can be detected by the bluish-black coloration produced on adding ferric chloride. Gums of a yellow or brown colour usually contain tannin, and these, together with such as are incompletely soluble in water and which yield ropy or glairy solutions, should not be used for medicinal purposes.

**---Chemical Constituents---**Gum Acacia consists principally of *Arabin*, a compound of Arabic acid with calcium, varying amounts of the magnesium and potassium salts of the same acid being present. It

is believed, also, that small amounts of other salts of these bases occur. (Arabic acid can be obtained by precipitating with alcohol from a solution of Acacia acidulated with hydrochloric acid.) The gum also contains 12 to 17 per cent of moisture and a trace of sugar, and yields 2.7 to 4 per cent of ash, consisting almost entirely of calcium, magnesium and potassium carbonates.

**---Medicinal Action and Uses---**Gum Acacia is a demulcent and serves by the viscosity of its solution to cover and sheathe inflamed surfaces.

It is usually administered in the form of a mucilage - *Mucilago Acaciae*, British Pharmacopoeia and United States Pharmacopoeia made from small pieces of Gum Acacia dissolved in water and strained (1 in 8.75).

**---Dose---**in syrup, 1 to 4 drachms of the gum. Mucilage of Acacia is a nearly transparent, colourless or scarcely yellowish, viscid liquid, having a faint, rather agreeable odour and an insipid taste. It is employed as a soothing agent in inflammatory conditions of the respiratory, digestive and urinary tract, and is useful in diarrhoea and dysentery. It exerts a soothing influence upon all the surfaces with which it comes in contact. It may be diluted and flavoured to suit the taste. In low stages of typhoid fever, this mucilage, sweetened, is greatly recommended. The ordinary dose of the mucilage is from 1 to 4 fluid drachms.

In dispensing, Mucilage of Acacia is used for suspending insoluble powders in mixtures, for emulsifying oils and other liquids which are not miscible with water, and as an ingredient of many cough linctures. The British Pharmacopoeia directs it to be used as an excipient in the preparation of troches. Compound Mucilage of Acacia - Pill-coating Acacia - is made from Gum Acacia, 1 in 10, with tragacanth, chloroform and water, and is used for moistening pills previous to coating.

Gum Acacia is an ingredient of the official *Pilula Ferri*, *Pulvis Amygdalae compositus*, *Pulvis Tragacanthae compositus*, all the official *Trochisci*, and various syrups, pastes and pastilles or jujubes.

Acacia Mixture, *Mistura Acaciae* of the British Pharmacopoeia Codex, is made from Gum Acacia (6 in 100) with syrup and diluted orange-flower water, employed as a demulcent in cough syrups and linctures.

**---Dose---**1 to 4 fluid drachms. Syrup of Acacia, British Pharmacopoeia Codex, used chiefly as a demulcent in cough mixtures, is freshly prepared as required, from 1 part of Gum Acacia Mucilage and 3 of syrup, the dose, 1 to 4 fluid drachms.

The United States Pharmacopoeia Syrup of Acacia, though regarded as a useful demulcent, is chiefly employed as an agent for suspending powders in mixtures.

The French Pharmacopoeia has a Syrup of Acacia and a *potion gommeuse* made from powdered Acacia, syrup and orange-flower water.

As a dry excipient, powdered Acacia is employed, mixed in small proportion with powdered Marsh Mallow root, or powdered Liquorice root. A variation of this is a mixture of Acacia, 50 parts; Liquorice root, 34 parts; Sugar, 16 parts, all in fine powder. Another compound Acacia Powder used sparingly as an absorbent pill excipient, is made of equal parts of Gum Acacia and Tragacanth.

Gum Acacia is highly nutritious. During the time of the gum harvest, the Moors of the desert are said to live almost entirely on it, and it has been proved that 6 oz. is sufficient to support an adult for twenty-four hours. It is related that the Bushman Hottentots have been known in times of scarcity to support themselves on it for days together. In many cases of disease, it is considered that a solution of Gum Arabic may for a time constitute the exclusive drink and food of the patient.

## Also known as

*Acacia senegal* (acacia gum or true gum arabic), *Acacia nilotica* (Indian gum arabic), and *Acacia seyal* (talha).

## Description

The acacia trees of the Dafur region of Sudan are harvested for resins variously known as gum arabic, Indian gum arabic, or talha. Although acacia trees are found throughout the 'gum belt' of sub-Saharan Africa, Chad, Eritrea, Kenya, Mali, Mauritania, Niger, Nigeria, Senegal, and Sudan, the plant is most abundant in Sudan.

The acacia is a plant in the family Mimosaceae, related to the mimosas of the southern United States and a close cousin of the legumes. It would not be inaccurate to think of the acacia as a tree-sized, woody, spiny bean.

The plant only produces acacia gum under adverse conditions, such as poor soil, drought, or heat, and damaged trees produce more gum. For these reasons, the most abundant harvest of acacia gum is produced in Sudan.

In the Southwestern United States a potentially toxic plant (a species of *Acacia*) known locally as *una de gato* (cat's claw) is frequently confused with the medicinal plant *una de gato* from the Peruvian Amazon (*Uncaria tomentosa*). It is not the rainforest herb, and it is not a source of acacia gum, although it is sometimes sold in hierberas as either or both.

## Constituents

Chemically, acacia gum is a combination of complex polysaccharides and proteins. On the molecular level, this arabinogalactan-protein complex is a beautiful amalgamation of complex branches, trapping water in its 'folds' for the use of the plant.

## Parts Used

The gum.

## Typical Preparations

Acacia gum is used in a variety of products ranging from ink to ice cream. In herbal medicine, the gum is used to bind pills and lozenges and to stabilize emulsions. It is also used to produce a medium for applying essential oils, balsams, resins, camphor, and musk. Acacia gum forms strings when combined with cherry extract.

## **Summary**

King's American Dispensatory, a guide to herbal medications for American physicians during the era when herbal medications were the preferred method of treatment (published in 1898), recommended acacia gum for treating any condition that could benefit from a soothing coating. Up until the 1940's, doctors frequently used acacia gums in water or sugar syrup to treat sore throat, laryngitis, diarrhea, and urinary tract infections. Pastes of acacia gum in water were used as an herbal bandage for scalds and burns.

## **Precautions**

Safe for internal use as a food and for external use without limitation, although allergies are possible for people exposed to windborne pollen (in Africa, India, or Saudi Arabia).