



Major Role of Bottle Gourd in Human Health

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Introduction:

Cucurbitaceae family is commonly known as the gourd, melon or pumpkin family. This family is composed of 118 genera and 825 species, which are widely distributed in the warmer regions of the world. The plants of cucurbitaceae family provide the major contribution for economically important domesticated species and are cultivated for medicinal and nutritional value. Among all plants of the cucurbitaceae family, *Lagenaria* species is the most popular. The bottle gourd belongs to the genus *Lagenaria* that is derived from the word *lagena*, meaning the bottle. The bottle gourd can be found in the forests of India, 88 Moluccas and Ethiopia.

The centre of origin has been located as the coastal areas of Malabar (North Kerala) and the humid forests of Dehradun (North India). *Lagenaria siceraria* (Molina) standley commonly known as lauki (Hindi) and bottle gourd (English). Both its aerial parts and fruits are commonly consumed as a vegetable. Traditionally, it is used as medicine in India,

China, European countries, Brazil, Hawaiian island, etc. for its cardiotoxic, general tonic and diuretic properties.

Cultivation and Collection:-

The cultivated form of *L. siceraria* is considered to be of African and Asian origin. *Lagenaria siceraria* is a popular vegetable, grown almost all the year round, particularly in frost free areas. It can be cultivated in all kinds of soil, but thrives best in heavily manured loams. It requires warm humid climate or plenty of water when grown during dry weather. Seeds may be sown in nursery beds and seedlings transplanted when they have put forth 2-3 leaves. They may be also sown directly, 4-5 seeds together, in manured beds or pits 5 - 6ft. Apart; the strongest among the seedlings is retained, while others are removed and transplanted. Seedling transplantation is where an early crop is desired, generally two crop raised in India; the summer crop is sown from the middle of October to the middle of March and the later crop, from the beginning of March to the

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Middle of July. Round fruit types are usually sown for the early crop and bottle-shaped types for the second crop. Vines are allowed to trail on the ground or trained over walls. Trees or other support trailing over to give high yield of fruit.

History:

The bottle gourd has been recovered from archaeological contexts in China and Japan dating to ca. 8,000–9,000 B.P., whereas in Africa, despite decades of high-quality archaeobotanical research, the earliest record of its occurrence remains the 1884 report of a bottle gourd being recovered from a 12th Dynasty tomb at Thebes dating to ca. 4,000 B.P. When considered together, the genetic and archaeological information points toward *L. siceraria* being independently brought under domestication first in Asia, and more than 4,000 years later, in Africa. The bottle gourd is a commonly cultivated plant in tropical and subtropical areas of the world, and was eventually domesticated in southern Africa. Stands of *L. siceraria*, which may be source plants and not merely domesticated stands, were reported in Zimbabwe in 2004. This apparent wild plant produces thinner-walled fruit that, when dried, would not endure the rigors of use on long journeys as a water container. Today's gourd may owe its tough, waterproof wall to selection pressures over its

long history of domestication (Erickson *et al.*, 2005).

The mystery of the bottle gourd – namely that this African or Eurasian species was being grown in the Americas over 8,000 years ago – comes from the difficulty in understanding how it arrived in the Americas.

The bottle gourd was theorized to have drifted across the Atlantic Ocean from Africa to South America, but in 2005 a group of researchers suggested that it may have been domesticated earlier than food crops and livestock and, like dogs, was brought into the New World at the end of the ice age by the native hunter-gatherer Paleo-Indians, which they based on a study of the genetics of archaeological samples. This study purportedly showed that gourds in American archaeological finds were more closely related to Asian variants than to African ones.

In 2014 this theory was repudiated based on a more thorough genetic study. Researchers more completely examined the plastid genomes of a broad sample of bottle gourds, and concluded that North and South American specimens were most closely related to wild African variants and could have drifted over the ocean several or many times, as long as 10,000 years ago (Walters *et al.*, 2004).

Health Benefits of Including Bottle Gourd in Your Diet:

Bottle gourd has multiple health benefits, some of which are:

1. Being rich in dietary fibre (both soluble and insoluble), it helps in preventing constipation, flatulence, and even piles. It is also easy to digest.
2. It promotes weight loss. The vitamins, minerals and dietary fibre in *lauki* keep the body well-nourished and curb unnecessary appetite, especially if you drink its juice in the morning on an empty stomach.
3. It also contains sodium, potassium, essential minerals and trace elements, which regulate blood pressure and prevent the risk of heart ailments such as hypertension.
4. It consists of approximately 96% of water and is, therefore, a great thirst quencher. It also prevents fatigue and keeps the body cool and refreshed during summers.
5. Apart from the iron content, it is also rich in vitamin B and C and helps in anti-oxidative actions.
6. It is a suitable vegetable for light, low-calorie diets as well as for children, people with digestive problems, diabetics, and those recovering from an illness or injury.
7. Bottle gourd is recommended by Ayurveda physicians for balancing the

liver function when the liver is inflamed and unable to process food efficiently for nutrition and assimilation (Clarke *et al.*, 2006).

Health Benefits of Bottle Gourd Juice:

Bottle gourd juice has numerous health benefits such as:

1. Drinking a glass of this juice in the morning helps in treating grey hair.
2. Mixing the juice with sesame oil provides an effective medicine for insomnia.
3. It is very helpful in managing epilepsy, indigestion, ulcers, and other neurological diseases.
4. The bitter variety of calabash gourd is considered a cardiac tonic and a tonic for alleviating bronchitis, cough, and asthma.
5. A glass of bottle gourd juice, mixed with a little salt, helps in preventing excessive loss of sodium from the body.
6. It acts as an alkaline mixture that relieves the burning sensation in the urinary passage.
7. The juice extracted from the leaves of bottle gourd is beneficial in jaundice (Genuse, 2002).

Benefits on Health:

The benefits of green vegetables are known to everyone. And bottle gourd,

commonly known as lauki, is a vegetable with many health benefits. It is known by different names such as white-flowered gourd, calabash, New Guinea bean, Tasmania bean and long melon. The vegetable is not only limited to providing a cooling effect in the body, but is quite beneficial for the heart and even helps reduce sleeping disorders. Bottle gourd comes in a variety of shapes: small and bottle shaped, huge and round or slim and twisty. The vegetable can grow over a metre long (Strabo, 2000). Here are a few health benefits of bottle gourd and why you should include this vegetable in your daily diet.

1. Reduces stress:

Consuming lauki on a daily basis can help in reducing stress. The water content in bottle gourd has a cooling effect on the body.

2. Benefits the heart:

This vegetable is also extremely beneficial for keeping one's heart healthy. Consuming lauki juice twice or thrice in a week will support in maintaining a healthy heart and will also regulate blood pressure.

3. Helps in weight loss:

Drinking lauki juice is believed to help lose weight. Bottle gourd is loaded with iron, vitamins and potassium. Consuming the juice everyday will definitely help you reduce weight.

4. For sleeping disorders:

The prevalence of sleep disorder in India is high. Besides its other benefits, lauki also helps in treating sleep disorders. Consume lauki juice for a sound sleep.

5. Prevents premature greying of hair:

Due to climate change and eating habits, premature greying of hair has emerged as a problem. Consuming a glass of bottle gourd juice everyday may help in maintaining the texture and stop premature greying of hair.

6. Digestion:

Loaded with fiber and alkali content, the vegetable helps in digestion and in treating acidity (Strabo, 2002).

Bottle gourd juice side effects:

The following are some of the side effects of bottle gourd juice:

1. Bottle gourd juice is toxic when bitter

Bottle gourd juice is very beneficial for a healthy body. But research has proved that if your bottle gourd juice is bitter consuming it could be highly toxic to your body and may cause even death. It may also cause various side effects such as diarrhea, nausea, vomiting, discomfort, or any feeling of uneasiness. So it is essential to check the taste of the juice before consuming it. Seek immediate medical help if you notice any of the above-mentioned side effects (Sirohi *et al.*, 1991).

2. Gastrointestinal problems.

Consuming bitter bottle gourd juice can lead to various problems such as duodenitis

(inflammation in the duodenum), gastric erosions (damage to stomach mucosa), gastric ulcers, and esophagitis (inflammation in the food pipe). It leads to bleeding in the upper gastrointestinal region when bitter bottle gourd juice is consumed (Modgil *et al.*, 2014).

3. Other side effects:

Drinking excessive bottle gourd juice may lead to hypoglycemia (low blood sugar) Bottle gourd juice may lead to allergic reactions in a few individuals (Baranoswka *et al.*, 1994).

Conclusions:

There is extensive genetic variation of bottle gourd in Africa for diverse qualitative and quantitative horticultural attributes for variety design, product development, and marketing. However, bottle gourd is under-researched and –utilized crop in sub-Saharan Africa. Improved varieties are yet to be developed and commercialized in the region to serve the diverse human needs and for the market place. The present review summarized progress on bottle gourd breeding, genetic resources, and advances in bottle gourd genomics, genetic engineering and genome editing to guide cultivar development. There is need for collaborative research on bottle gourd involving plant breeders, agronomists, geneticists, and food scientists in the region and internationally for knowledge and germplasm sharing and innovative product

development. The next generation of bottle gourd cultivars should encompass product profiles including quality and quantity leaves, fruit, fodder, seed, and nutritional compositions to serve varied value chains and the food and feed industry (Chang *et al.*, 1995).

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