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## Nutritive Value and Medicinal Use of Cultivated Cucurbits

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Cultivated cucurbits, including cucumbers, pumpkins, melons and gourds are valued for their rich nutritive and medicinal properties. Nutritionally, they provide essential vitamins such as A, C, and E along with minerals like potassium, magnesium and zinc, while also being low in calories and high in water content, making them beneficial for hydration and weight management. Medicinally, cucurbits are known for their bioactive compounds, which exhibit antioxidant, anti-inflammatory and antimicrobial properties. These compounds contribute to various health benefits such as improving digestion, regulating blood sugar levels, enhancing skin health and supporting heart health. Additionally, they have been associated with reducing the risk of chronic diseases, including diabetes, cardiovascular disorders and certain cancers.

**Keywords:** Antimicrobial, beta carotene, cucurbitacin, laxative

### Introduction

Cucurbits is a fascinating diverse family including some of the most widely cultivated and consumed vegetables and fruits globally. Belonging to the cucurbitaceous family, these warm-season crops are native to tropical and subtropical regions, with a rich history of cultivation dating back thousands of years. Some of the most popular cucurbits include:

- Cucumber (*Cucumis sativus*), a hydrating vegetable commonly consumed fresh or pickled.
- Pumpkin (*Cucurbita pepo*), known for its edible flesh and seeds, rich in nutrients and antioxidants.
- Watermelon (*Citrullus lanatus*), a sweet, hydrating fruit packed with vitamins and minerals.
- Bitter gourd (*Momordica charantia*), a vegetable known for its medicinal properties, particularly in regulating blood sugar.
- Muskmelon (*Cucumis melo*), a sweet fruit variety that includes cantaloupe and honeydew, often consumed fresh or in desserts.

Cucurbits characterized by their vining or spreading habits and a wide range of fruit shapes, sizes and colours. From the refreshing sweetness of watermelon and melons to the versatility of cucumbers, squash and pumpkins cucurbits have become an integral part of cuisines, cultures, and economies worldwide. Beyond their culinary significance, cucurbits also offer numerous health benefits, medicinal properties and ecological advantages, making them a valuable and sustainable crop for future generations. Nutritional issues are increasingly prevalent in underdeveloped and developing countries, highlighting the urgent need for better nutrition.

### Importance of cucurbits

#### 1. Nutritional Value of Cucurbits

- Rich in Vitamins: Cucurbits like pumpkins and squashes are high in vitamins, especially Vitamin A (from beta-carotene), Vitamin C and B-vitamins.

- **Mineral Content:** They provide essential minerals like potassium, magnesium, calcium, and iron which support various bodily functions.
- **Low in Calories:** Most cucurbits, particularly cucumbers and zucchini, are low in calories, making them ideal for weight management.
- **High in Fiber:** They are rich in dietary fiber, which aids digestion, promotes bowel regularity and contributes to heart health by lowering cholesterol
- **Water Content:** Cucurbits like cucumbers and melons have a high water content, promoting hydration and supporting skin health.



**Common cultivated cucurbits**

## 2. Health Benefits

- **Antioxidant Properties:** The high levels of antioxidants, including carotenoids, flavonoids and Vitamin C help combat oxidative stress and reduce the risk of chronic diseases like cancer and heart disease.
- **Anti-inflammatory Effects:** Certain compounds in cucurbits have anti-inflammatory effects, which can help reduce inflammation and alleviate symptoms of diseases like arthritis.
- **Supports Vision Health:** Beta-carotene in pumpkins and squashes promotes healthy vision and helps prevent age-related macular degeneration.
- **Diabetes Management:** Some cucurbits, like bitter melon, have been shown to lower blood sugar levels and improve insulin sensitivity, making them useful for managing diabetes.
- **Heart Health:** Cucurbits are beneficial for cardiovascular health due to their fiber content, potassium levels and antioxidant compounds that reduce blood pressure and cholesterol.

## 3. Culinary Uses and Functional Foods

- **Versatility in Cooking:** Cucurbits can be consumed in various forms, from raw (cucumbers) to cooked (pumpkins, squashes) and are widely used in soups, salads, juices and desserts.
- **Functional Foods:** Many cucurbits are considered functional foods, meaning they provide health benefits beyond basic nutrition such as promoting gut health or supporting metabolic functions.
- **Use in Smoothies and Juices:** Cucurbits like cucumbers and melons are commonly used in detox drinks and smoothies due to their hydrating properties and mild flavour.

#### 4. Traditional Medicine and Cultural Uses

- Ayurvedic and Traditional Medicine: Cucurbits, particularly bitter melon, are used in these systems to treat various ailments, including diabetes, fever and digestive issues.
- Ethno medicine: Many indigenous cultures utilize cucurbits for medicinal purposes, applying their extracts in poultices for wound healing and using them as tonics for overall health.

#### 5. Bioactive Compounds

- Cucurbitacins: These are biologically active compounds found in some cucurbits, particularly bitter varieties that exhibit anti-cancer, anti-inflammatory and anti-viral properties.
- Lignans and Flavonoids: These compounds are present in various cucurbits and are linked to reduced cancer risks and improved cardiovascular health.

#### 6. Potential Risks and Precautions

- Toxicity in Some Varieties: Some wild cucurbits contain high levels of cucurbitacin, which can be toxic if consumed in large quantities.
- Allergies: Though rare, some people may have allergic reactions to cucurbits, particularly cucumbers and melons.

### Cucumber

Cucumber contains different types of flavonoids such as apigenin, diosmetin, fisetin, luteolin, quercetin, kaempferol, luteolin, naringenin, vicenin. It also contains different type's lignans pinoresinol, lariciresinol and triterpenes like cucurbitacin A, cucurbitacin B. Eating cucumber in daily basis can improve hair growth and soothes skin, reduce swelling of eye. Cucumber juice can improve the skin texture and cures skin infections, eczema. Effects of cucumber for a sun stroke patient can reduce the heat of the body. It can help in weight loss and the mashed seeds with sugar before meal can reduce intestinal worms and tape worms. It contained high potassium so it can help to keep normal blood pressure.

### Bottle Gourd

Bottle gourd is used as a vegetable to give good health and treat mental health disorders. Moreover, only bottle gourd encompasses the highest choline level and appropriate metabolic precursors for brain functioning in the cucurbit family. Therefore, the bottle gourd has good therapeutic importance and is recommended to be consumed in daily diet for nutrition.

1. **Seeds:** The seeds of the bottle gourd are rich in various phytochemicals, vitamins, minerals, amino acids and omega fatty acids. When utilized effectively, these seeds can play a crucial role in addressing malnutrition issues in developing countries. The seed kernel is composed of approximately 2.47% moisture, 30.72% protein, 52.54% fat, 8.3% carbohydrates, 4.43% ash, and 1.58% fiber. Additionally, the oil extracted from these seeds is pale yellow and is often used in hair care treatments.
2. **Peel of bottle gourd:** The raw, steamed or boiled peel of bottle gourd has high calcium and iron about 12.5 and 11.25mg respectively and phosphorus content is higher than in the whole bottle gourd fruit. Bottle gourd's skin has the highest (84.86%) scavenging activity compared to whole and pulp (20.73%).
3. **Juice of bottle gourd:** The fresh juice of the fruit also showed free radical scavenging activity and fruit extract was also effective in carbon tetrachloride induced liver damage where it maintained the level of endogenous antioxidant enzymes (superoxide dismutase, catalase and glutathione peroxidase) and marker of lipid peroxidation to normal.

### Pumpkin Seeds

There are three main types cultivated such as *Cucurbita pepo*, *Cucurbita maxima* and *Cucurbita moschata*. The pumpkin seeds have been used for medicinal purpose possess nutritional and therapeutic importance along with significant role in providing of micronutrients used in treatment and management of diabetes, inflammation, hyperlipidaemia, hypertension, cancer management and protect heart etc.

## Watermelon

Watermelon has micronutrients crucial for the physiological functions of the human body. A chunky rind and a fleshy middle (i.e., pulp) containing lycopene and beta-carotene contributing diverse colours characterize watermelon. Its fruits produce 55.3% juice, 10.4% pomace and 31.5% rind and great sources of a variety of antioxidant bioactive such as vitamins, phenolic compounds and carotenoids. Its by-products have also produced fortified or enriched applications in staple foods, bakery, dairy and dairy alternatives.

## Snake Gourd

It is cultivated throughout the country. The fruits are eaten as vegetables and also used as tonic and laxative. The seeds are anthelmintic, antidiarrheal, used for biliousness, in syphilis and having cooling effect. Fruits of cultivated cucurbits are really useful of human health these fruits have got water, protein, fat, minerals, fibre, carbohydrates, energy, calcium, magnesium, potassium, phosphorus, iron, sodium, copper, sulphur, chlorine etc. In other hand, it has got vitamin A, Thiamine, Riboflavin, vitamin C and nicotinic acid and oxalic acid.

## Ashgourd

Ash gourd encompasses of high-water content approximately 96% and is rich source of dietary fibres which have excellent prebiotic activity. Its consumption contributes to negligible number of calories and carbohydrates. It is rich source of vitamin C, flavonoids and carotene. It treats burning sensation, acid reflux and hyperacidity. The efficacy of ash gourd fruit in preventing cell damage and preventing type 2 diabetes and heart disease may be attributed to the antioxidant property. The functionally important bioactive and therapeutic compounds phenolic, sterols and glycosides of ash gourd can be used for sterols and glycosides of ash gourd can be used for treatment of epilepsy, ulcers and other nervous disorders. The antacid action of ash gourd helps maintain body pH and counteracts acidity caused by some foods.

## Conclusion

In conclusion, cultivated cucurbits offer a wealth of nutritive and medicinal benefits. Their high water content makes them valuable for hydration and weight management. From a medicinal perspective, cucurbits possess various bioactive compounds with anti-inflammatory, antioxidant and antimicrobial properties. They have been traditionally used to support digestive health, improve skin conditions, regulate blood sugar levels and enhance heart health. Modern research supports their role in preventing chronic diseases such as cancer, diabetes and cardiovascular conditions.

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