



Review Article

Comprehensive review on Bitter melon

A.P Aher*, A.D Khajekar, A.K Hatkar, R.M Kawade

Nandkumar Shinde college of pharmacy, Aghur, vaijapur 423701 Dist – Aurangabad, Maharashtra.

ARTICLE INFO

Received: 02 Dec 2023

Accepted: 05 Dec 2023

Published: 06 Dec 2023

Keywords:

Bitter melon, Momocardica Charantia, Bioactive compounds, Nutrients

DOI:

10.5281/zenodo.10276883

ABSTRACT

Bitter melon is a tropical vine found in India, China, and Southeast Asia. It contains 60 phyto-medicines that treat many diseases. Bitter melon has many bioactive components that are beneficial for medicinal use. Bitter melon is also used in obesity. Bitter melon has very few side effects and has more beneficial properties. Whole parts of bitter melon have medicinal properties. Bitter melon is used to treat diabetes, cancer, and viral diseases. In this, we study the many functions of bitter melon as well as their function according to their activity.

INTRODUCTION

Momocardica charantia is also known as bitter melon or bitter apple or balsam pear. Bitter melon is a topical vine belonging to the order curcubitales, family cucurbitaceae and genus Momocardica. Bitter melon is tropical vine grown mainly in India, China and South East Asia. The plant contain 60 phyto- medicines that are active against more than 30 disease including diabetes, cancer. It is traditionally used in the treatment of diabetes. People’s used bitter melon for treatment of diabetes, otheletic performance, osteoarthritis and many other condition. [1,2] Bitter melon becomes more and more better when it ripen. It shows anti-cancer, anticholesterol, anti-

dementia, antibacterial, antifungal, anti-inflammatory diseases.

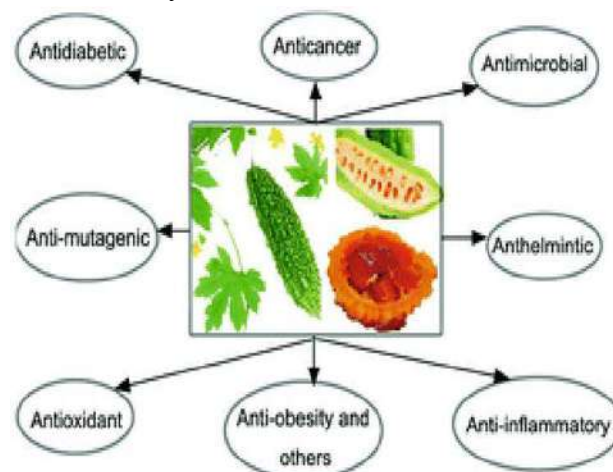


Fig no. 1 Multifunctional activity of bitter melon[3]

***Corresponding Author:** Arti Prakash Aher

Address: Nandkumar Shinde college of pharmacy Aghur, vaijapur, 423701 Dist: Aurangabad, Maharashtra

Email ✉: artiaher71@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Bitter melon (Plant description)

The plant is an annual vine, about 2 to 4 metres tall, that is, thin, and tendril-climbing[4]. Each plant have yellow colour flowers. Different fruits have different shapes basically fruits are 2 to 10 cm long. Bitter melon take 45 to 80 days to mature. [5]



Fig no.2 Bitter Melon

1. Phytochemicals present in bitter melon:

Bitter melon contain many bioactive compounds like tannins, flavonoids, alkaloids, cardiac glycosides and steroids.[6]

Sr no	Bioactive compound	Total content	Function
1	Terpenoids	0.5317% [6]	Responsible for growth of plant. anticancer, antioxidant, anti diabetic properties. [7]
2	Saponins	0.0232% [6]	Antihypoglycemic, hypolipemic, antiviral activity. [7]
3	Polysaccharides	6% [7]	Antioxidant, antidiabetic, antitumor activity. [7]
4	Protein and Lipids	18.02% [8]	Antitumor, antioxidant activity. [7]

2. Toxicity:-[9]

a. Taken by mouth:

Bitter melon may be cause upset stomach in some people. It is safe when use is upto 4 months.

b. Applied to skin:

It may be cause rashes

c. pregnancy:

Chemicals can harm pregnancy.

d. surgery:

Bitter melon interact with blood sugar during and after pregnancy.

e. Breastfeeding: It is safer to avoid its use while breastfeeding, as there is not enough information about its safe use during breastfeeding. Consult your doctor before consuming karela. [10]

3. Mechanism according to function of Bitter melon:-

- **Effect of Bitter melon on cancer:-**

Components of bitter melon decrease level of cyclin B1 and cyclin D1 while raising p21 level which produce cell cycle arrest. Bitter melon parts activate both caspase-8 and caspase-9 pathway then activate caspase 3 pathway and PARP cleavage and producing apoptosis. [11,12]

- **Effect of Bitter melon on Diabetes:-**

Bitter melon contain nutrients that are beneficial for health. It can lowering the blood sugar that's why it can treat diabetes. Bitter melon avoid body from changing nutrients which is store in glucose and then release in blood. Bitter melon has long been used by indigenous peoples around the world to treat ailments related to diabetes. In recent years, several studies have confirmed the role of the fruit in controlling blood sugar. [13] A three-month study of 24 diabetics showed that taking 2,000 mg of bitter melon daily lowered blood sugar and haemoglobin A1c, a test used to measure blood sugar control, for three months. [13]

- **Anticholesterol activity:**

In humans, the water-soluble extract of bitter melon dramatically reduced LDL-C levels as compared to the placebo (control) group. Thus, bitter melon may help lower the risk of disorders like cardiovascular disease (CVDs) that are mediated by cholesterol. [14] High cholesterol can cause fatty plaque to build up in your arteries, forcing your heart to work harder to pump blood and increasing your risk of heart disease. [15]

• **Antioxidant Activity :**

bitter melon contains various antioxidant compounds such as water-soluble vitamin C, lipophilic vitamin E and carotenoids. [16] The higher TAC of unripe bitter melon fruits is related to their high vitamin C content. As the fruit ripens, the vitamin C content decreases and the carotenoid content increases (forming the orange color). Goon et al.[17] vitamin c is dependent on the ripening of fruits.

• **Antiviral Activity:**

Bitter melon phytochemicals have antiviral activity against human immunodeficiency virus, hepatitis B virus, influenza virus and herpes simplex virus.[18]

4.Important nutrients of bitter melon:[19]

Sr no	Nutrients	Quantity
1	Calories	21gm
2	Carbs	4gm
3	Fibre	2gm
4	Vitamin c	99%of daily value
5	Vitamin A	44%of daily value
6	Folate	17%of daily value
7	Potassium	8%of daily value
8	Zink	5%of daily value
9	Iron	4%of daily value

5.Bitter melon is beneficial in Obesity:

Bitter melon supplementation (0.75% of the diet) significantly prevented weight gain and visceral fat mass in rats fed a high-fat diet. This weight loss may be due to increased oxidation of fatty acids, which ultimately facilitates weight loss.[20]

6.Subspecies and varieties of bitter melon:-[21]

- Momordica charantia var. abbreviata
- Momordica charantia var. charantia
- Momordica charantia ssp. macroloba
- Momordica charantia L. var. muricata

- Momordica charantia var. Pavel

CONCLUSION

Bitter melon is used as a supplement for treating many diseases. It has fewer side effects and more benefits. Bitter melon is used in different regions with different names. It is identified by its multifunctional properties. Bitter melon is used to treat obesity as well. So there are many functions of bitter melon included in this study.

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HOW TO CITE: A.P Aher*, A.D Khajekar, A.K Hatkar, R.M Kawade Comprehensive review on Bitter melon, *Int. J. in Pharm. Sci.*, 2023, Vol 1, Issue 12, 121-124. <https://doi.org/10.5281/zenodo.10276883>.

