



- **Latin Name:** Momordica Charantia
- **Active Ingredient:** Charantin
- **CAS No.:**
- **Test method:** TLC
- **Specifications:** 4:1,10:1

Product Description:

Name :Bitter Melon Extract

Source: Bitter Melon

Botanical Name : Momordica Charantia

Extract part: Fruit

Composition ratio:10 to 1

Appearance: Fine Brownish Yellow powder

Country of origin:P.R. China

Source

Momordica charantia is a plant from the Cucurbitaceae family that grows in parts of Africa, Asia, the Caribbean, and South America. It grows a fruit that looks like a cucumber which commonly known as bitter melon, bitter gourd, bitter squash, balsam pear, pare, or karela. Its many varieties differ substantially in the shape and bitterness of the fruit. Bitter melon originated on the Indian subcontinent, and was introduced into China in the 14th century.

People use bitter melon as both a food and a traditional medicine.

Topically, bitter melon is used for deep skin infections (abscesses) and wounds.

Bitter melon is used traditionally for various stomach and intestinal disorders including gastrointestinal (GI) upset, ulcers, colitis, constipation, and intestinal worms. It is also used for diabetes, kidney stones, fever, a skin condition called psoriasis, and liver disease; to start menstruation; and as supportive treatment for people with HIV/AIDS.

Bitter melon has several biological and pharmacological activities including anti-cancer, anti-viral, anti-bacterial, analgesic, antiinflammatory, hypotensive, anti-fertility, and anti-oxidant

Main Bio-actives

Momordica charantia is good source of minerals such as Mg, Ca, S and Cu. The fruits contained calcium and sulphur. Nowadays, researches revealed Momordica charantia contains diverse biologically active chemicals includes essential oil, flavonoids, saponins, alkaloids, phenolic acids, cardiac glycosides, tannins, terpenoids, steroids, xanthoproteins, triterpin, sterol,

resin, phlobaphenins and amino acids. It also contains steroidal saponins called charantin.

Momordica charantia has enormous nutritional potentials. At least three different groups of constituents in bitter melon have been reported to have blood-sugar lowering actions of potential benefit in diabetes mellitus. These include a mixture of steroidal saponins known as charantin, insulinlike peptides, and alkaloids.

Functions

Antidiabetic effects

There many researches focus on the antidiabetic action of Momordica charantia. Scientists have been studying the potential for Momordica charantia to modulate blood glucose and its therapeutic effects in the treatment of diabetes.

Early investigation did in 2003 showed the aqueous extract powder of Momordica charantia is an effect comparable to that of glibenclamide, a known synthetic drug as it was found to reduce fasting blood glucose by 48%. Furthermore, the extract did not show any signs of nephrotoxicity and hepatotoxicity as judged by histological and biochemical parameters.

Further literature released on Bioactive Foods in Promoting Health reviewed Momordica charantia has been shown in fact Momordica charantia is used as an alternative nutritional therapy in the management of diabetes because of its hypoglycemic effect. The studies have shown it possess hypoglycemic properties in normal animals, in animals fed a high fat diet, and in streptozotocin (STZ)-, alloxan- and genetically induced animal models of diabetes.

Moreover, in vitro studies have provided some convincing elucidation of the mechanisms of Momordica charantia antidiabetic action. Some cell-based studies have suggested the mechanisms of action of MC on the liver, as well as in peripheral tissues. Another proposed mechanism of action of MC is through its direct effect on the β cells of the pancreas and on the intestinal absorption of dietary glucose and amino acids. An aqueous extract of MC fruit was found to be a potent stimulator of insulin release from isolated β -cell-rich pancreatic islets obtained from obese hyperglycemic mice.

Wound Healing in Diabetic Patients

The healing of wound is a complex process which requires the interactions of different cells and extracellular molecules. In diseased condition like diabetes mellitus, the wound healing process is grossly impaired, resulting in chronic wounds which fail to heal. Study published on Clin Ter. in 2010 Momordica charantia processes potent wound healing action amount several traditional plants. In studies done in diabetic rats, the application of Momordica charantia extract improved and accelerates the process of wound healing in diabetic animals.

Anti-cancer

Scientists investigated the cytotoxicity activities of the Momordica charantia extract against lung cancer cell line A549, glioblastoma cell line U87, and hepatoma carcinoma cell line Hep3B by using a 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) in vitro assay. They reported the study result on J Agric Food Chem. in 2012 showed Momordica charantia extract exhibited significant cytotoxic activities against cancer cells.

Inhibiting Breast Cancer

Article on Cancer Research suggest that Momordica charantia can be used as a dietary supplement for prevention of breast cancer for its inhibition of breast cancer cell growth .

The researchers investigated the efficacy of Momordica charantia extract(MCE) as an anticancer agent against human breast cancer cells, MCF-7 and MDA-MB-231, and primary human mammary epithelial cells in vitro model .MCE treatment of breast cancer cells resulted in a significant decrease in cell proliferation and induced apoptotic cell death. Apoptosis of breast cancer cells was accompanied by increased poly(ADP-ribose) polymerase cleavage and caspase activation. Subsequent studies showed that MCE treatment of breast cancer cells inhibited survivin and claspin expression. Further studies revealed that MCE treatment enhanced p53, p21, and pChk1/2 and inhibited cyclin B1 and cyclin D1 expression, suggesting an additional mechanism involving cell cycle regulation.

In conclusion, MCE modulates signal transduction pathways for inhibition of breast cancer cell growth.

Anti-leukemic

Momordica charantia has been demonstrated to process anticancer activity by numerous in vitro and in vivo studies. In the study reported on Evidence-Based Complementary and Alternative Medicine ,researchers investigated the differentiation inducing potential of fractionated M. charantia seed extracts in human myeloid HL60 cells.

The research group found that the HL60 cells treated with the fractionated seed extracts differentiated into granulocytic lineage as characterized by NBT staining, CD11b expression, and specific esterase activity. The differentiation inducing principle was found to be heat-stable, and organic in nature. The differentiation was accompanied by a downregulation of c-myc transcript, indicating the involvement of c-myc pathway, at least in part, in differentiation.

Taken together these results indicate that fractionated extracts of M. Charantia seeds possess differentiation inducing activity and therefore can be evaluated for their potential use in differentiation therapy for leukemia in combination with other inducers of differentiation.

Applications

Bitter melon is used traditionally for various stomach and intestinal disorders including gastrointestinal (GI) upset, ulcers, colitis, constipation, and intestinal worms. It is also used for diabetes, kidney stones, fever, a skin condition called psoriasis, and liver disease; to start menstruation; and as supportive treatment for people with HIV/AIDS.

Modern researches show potential in applications of Bitter melon extract as an alternative nutritional therapy, a dietary supplement for prevention of cancers such as breast cancer.

Adverse effects

Reported side effects include diarrhea, abdominal pain, fever, hypoglycemia, urinary incontinence, and chest pain. Symptoms were generally mild, did not require treatment, and resolved with rest.

--Edralin A. Lucas, Gerard G. Dumancas, etc; "Chapter 35 – Health Benefits of Bitter Melon (Momordica charantia)"; Bioactive Foods in Promoting Health Fruits and Vegetables 2010, Pages 525–549

--BITTER MELON: Uses, Side Effects, Interaction; <http://www.drugs.com/npc/bitter-melon.html>

--Jaspreet Viridi, S Sivakami, etc; "Antihyperglycemic effects of three extracts from Momordica

- Charantia”; Journal of Ethnopharmacology Volume 88, Issue 1, September 2003,
- Baby Joseph and D Jini; “Antidiabetic effects of Momordica charantia (bitter melon) and its medicinal potency”; Asian Pac J Trop Dis. 2013 Apr
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- Wang X, Sun W, Cao J, Qu H, Bi X, Zhao Y; “Structures of new triterpenoids and cytotoxicity activities of the isolated major compounds from the fruit of Momordica charantia L.”; J Agric Food Chem. 2012 Apr
- Ratna B. Ray, etc; “Bitter Melon (Momordica charantia) Extract Inhibits Breast Cancer Cell Proliferation by Modulating Cell Cycle Regulatory Genes and Promotes Apoptosis”; Cancer Research. 2010
- Ramani Soundararajan, etc; “Antileukemic Potential of Momordica charantia Seed Extracts on Human Myeloid Leukemic HL60 Cells”; Evidence-Based Complementary and Alternative Medicine Volume 2012
- Ooi CP, Yassin Z, Hamid TA.; “Momordica charantia for type 2 diabetes mellitus”; Cochrane Database Syst Rev. 2012 Aug

