



The Pharmacological Effects of Bitter Melon



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Abstract

Plants have been used in alternative therapies of diseases since ancient times. In recent years, research has identified the benefits of a large number of plants used as conventional medicines. Bitter melon (*Momordica charantia*) has traditionally been milk-enhancing, laxative, antidiabetic, and antihelmintic as well as contraceptive, painful menstruation, eczema, gout failure, jaundice, abdominal pain, kidney stone, leprosy, hemorrhoids, pneumonia, psoriasis since ancient times. disease, rheumatism, fever and scabies, as well as many symptoms and diseases. In addition, recent studies have shown that it is effective against *Helicobacter pylori* in the treatment of peptic ulcer and colitis. Research has been shown to have an effect against many types of cancer (leukemia, lymphoma, choriocarcinoma, melanoma, breast cancer, skin tumors, etc.). With this study, it was aimed to be an auxiliary source for the study of this plant with the pharmacological evaluation of Bitter melon.

Keywords: Bitter melon; Phytotherapy; Antidiabetic effect; Anticancerogenic effect

Introduction

Especially in developing countries, which correspond to a large proportion of the world population, conventional drugs are used to solve medical problems. Recent studies have focused on the scientific evolution of traditional herbal medicines. Bitter melon is one of the plants used as an alternative in the treatment of medical problems [1,2].

The health effects of Bitter melon

Various plants and nutrients have been used in the treatment of diseases from past to present. Recently, the use of therapeutic properties of natural resources is increasing. Among the reasons for this situation; In some cases, synthetic drugs are insufficient and various side effects are detected. In addition, while synthetic drugs affect a single region, the herbal products can be more effective with their rich ingredients and they can be used by large masses because they are cheap and easily accessible [3,4].

Pharmacological Effects

Antidiabetic Effect

Some clinical studies have shown that Bitter melon reduces glucose levels in the blood by improving glucose tolerance and decreases hemoglobin A1c levels in some type 2 diabetes patients [5,6]. In most of the studies, it is stated that the potency of glucose causes hypoglycemia by stimulating the use of glucose in the primary skeletal muscles. It has been found that the pancreas protects β cells by inhibiting the absorption of glucose in the intestines and increases the release of insulin by suppressing the glucogenetic enzyme [7-10].

Anticancerogenic Effect

Remarkably, it has been shown to show anticarcinogenic activity against malignant tumors [11,12]. Many pre-clinical studies indicate that the extracts of Bitter melon or isolated compounds show an anticarcinogenic effect against lymphoid leukemia, lymphoma, breast, skin, prostate, colon, urinary bladder, pancreas and hodgking disease [13].

Antioxidant Effect

It is known that the damage caused by oxidative stress caused by the absence of free radicals in cells plays a causal role in the formation of cancer and similar disease states [14]. Research shows that the potent plant is a rich source of antioxidants and can potentially be useful against the harmful effects of free radicals [15]. In particular, the bark and seeds of the fruit are rich in phenolic compounds exhibiting strong anti-oxidant [16].

Antiulcer Effect

Extract prepared with fresh fruits and dried fruits mixed with olive oil or honey in Turkey is used for the treatment of peptic ulcer. It has been reported that *Helicobacter pylori*, which is responsible for the development of fruits as well as stomach and duodenal ulcers, prevents the growth of organisms [7].

Effects on Skin Wounds

It is stated that the cream gel and honey blended products obtained from the virgin fruit are beneficial in the external application of the skin wounds, tissue disorders and skin

problems such as psoriasis, abscess and eczema [17]. In addition, it has been observed that regional *Momordica charantia*, which is applied in acute burns, has been found to be effective in maintaining the locos infiltration, collagen decolorization, vein, hair root and glandula sebaceous damage, and the maintenance of the number of vessels and epidermis thickness [18].

Effect of Estradiol

The changes in menopause and the decrease of estradiol (E2) hormone levels in the circulatory system, which causes the quality of life of the females, is decreased and replaced by estrone hormone. In experimental studies performed for this purpose, it was found that Bitter melon fruit serum estradiol, estrogen receptors increased ESR-1 and ESR-2 levels, histologically decreased neutrophil infiltration, and cell and collagen distribution returned to normal and epithelial cells were increased [19].

Antimicrobial Effect

Extracts of the pomegranate, especially the leaves, obtained with ethanol and methanol, have antimicrobial activity against many microorganisms such as *Escherichia coli* L, *Salmonella paratyphi* L. and *Shigella dysenterae* L. It has been found that the phenolic compounds in the fruit of the pomegranate inhibit the enzymes in microorganisms and eliminate the harmful effects of microorganisms [17].

Antiviral Effect

Momordica charantia proteins inhibit the growth of HIV 1 virus in T cells, monocytes and virus-infected cells. It shows its effect by inhibiting HIV 1 inductase. It has been shown that the MRK29 protein obtained from fruit and seed is 50% inhibited by HIV terstranskriptase. MRK29 reduces viral core protein HIV-1 infected cells by 82% and increases tumor necrosis factor (TNF) activity three-fold [20].

Conclusion

In recent studies, Bitter melon affects many systems thanks to its components and protein structure. It has been observed that the plant has a decrease in the formation of all organs such as breast, pancreas and colon. It has been reported that it is very common in the digestive system, diabetes mellitus and skin problems. It has also been shown to have antibacterial and antiviral effects. Studies show that the Bitter melon, which is commonly used in the world, is used effectively in public health as an alternative to chemical methods in treatment in our country. Therefore, it is thought that this fruit can be used in the treatment of veterinary medicine and human medicine with new researches on bioactive substances found in Bitter melon and studies on this subject should be supported.

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