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A Review on *Cucumis sativus* L. and its Anti-Ulcer Activity

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ABSTRACT

The term "medicinal plant" refers to a plant that has active components with therapeutic properties and is used to treat disease or illness in various medical systems or conventionally. Every continent uses medicinal plants extensively and successfully. Herbal medicine is an extremely well-known and well-documented technique in Asia. *Cucumis sativus* L. is a well-known medicinal herb having variety of pharmacological activity. In traditional Unani medicine system this plant is use to cure variety of disease, ulcer is one of them. In this article we have discussed about its anti-ulcer potentiality.

Keywords- *Cucumis sativus* L., Phytochemicals, Traditional uses, Antiulcer activity.

I. INTRODUCTION

Nowadays peptic ulcer is a serious problem, near about 10% of the world's population is suffering with this problem[1]. The digestive activity of gastric juice as well as upper small intestinal secretions causes a peptic ulcer, which is an excoriated area of the stomach. It is essentially an inflamed break in the skin as well as the mucus membrane that lines the gastrointestinal tract. Prolonged NSAIDs (Non-steroidal anti-inflammatory drugs) use and *Helicobacter pylori* infection are two key factors that can impair mucosal resistance [2].

Plants are used for medicinal purposes in various countries and are also the origin of potent and powerful drugs. In modern medical and pharmaceutical research, the use of medicinal herbs has become an important part of daily life from over the centuries [3,4,5].Except for Allopathy, herbal drugs are used extensively in all of India's officially recognised health systems, including Ayurveda, Unani, Yoga, Homeopathy, Siddha, and Naturopathy. Almost 70% of Indian peoples are using these non-allopathic medicines [6].

Cucumis sativus is a member of the Cucurbitaceae family, which includes both wild and cultivated species, and therefore is consumed in a variety of ways, such as vegetables as well as salads[5].In Unani medicine, *Cucumis sativus* is known as cucumber as well as Khayarain. In traditional Unani medicine, seeds of Cucumis are used to treat various Cystitis, bronchitis, diarrhoea as well as renal diseases etc. Not just the seeds, also the leaves, root, fruits, and flower of Cucumis are beneficial in a variety of diseases[6].The plant has proven its various pharmacological activities such as antifungal activity, anti-bacterial activity, cytotoxic activity, activity against ulcerative colitis, antacid activity, carminative activity, hypolipidemic activity, hepatoprotective activity, hypoglycemic activity, and wound healing activity etc [7].

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II. PLANT PROFILE

The Cucurbitaceae family contains approximately 118 genera and 825 species. Plants in this family have numerous medicinal and nutritional benefits. Cucumber (*Cucumis sativa*L.) is a dioecious annual herbaceous plant in the Cucurbitaceae family that has been planted by human for over 3,000 years. In Asia, it ranks fourth in terms of economic value after onion tomatoes, and cabbage[3].

Scientific classification:[7]

Botanical Name: *Cucumis sativus* Linn.
Kingdome- Planate
Division - Angiosperms
Class- Eudicots
Order- Cucurbitales
Family- Cucurbitaceae
Subfamily- Cucurbitaceae
Genus- Cucumis
Species- *C. sativus*

Common names:[9]

English: Cucumber
Hindi: Khira
Bengali: Sasa
Assamese: Sasha
Gujarati: Kakadi

Phytochemicals:[10,11]

The plant contains a variety of significant phytochemicals, including glycosides, flavones, terpinoids, phytosterol, saponins, flavonoids, anolignan B, tannins, ellagic acid, glucose, and fructose.

The antioxidant, anti-cancer, anti-ulcer, anti-inflammatory, and immune-stimulating properties of flavonoids, tannins, saponin, and phenolic compounds are well-established. Flavonoids work as free radical scavengers and have significant antiulcerogenic effectalso. These substances have antiulcerogenic properties because they increase mucus, prostaglandin, and bicarbonate secretion, beside it mitigate the harmful effects of reactive oxidizing agents in gastrointestinal lumen. Tannins make the outermost layer of the mucosa less permeable to irritation from chemicals, while saponins may activate protective factors for the mucous membrane.

Traditional Use:[7,8]

Different parts of this plant (*Cucumis sativus* L.) are the common choices to treat different ailments.

Table 1: Different parts of *Cucumis sativus* L. and its traditional uses.

Sr. No	Part use	Traditional Uses
1	Fruits	Anthelmintic, asthma, antimicrobial activity, laxative, antipyretic, astringent, bronchitis, hepatitis, coughs, dyspepsia, piles, diarrhoea, eye diseases, hoarseness of voice, and scorpion-sting cough, menstrual disorder
2	Pulp	Dropsy, dysenteric-diarrhoea, leprosy, piles
3	Half ripe fruit	Purgative
4	Flowers	Anti-bacterial and anti-fungal activity
5	Leaves	Anti-oxidant, dyspepsia, throat infections
6	seed	Diuretic, urinary stones, anthelmintic

III. ANTI-ULCER ACTIVITY OF *Cucumis sativus* L.

Pharmacologically *Cucumis sativus* L. has shown its anti-ulcer activity in different research.
In this article we are shearing some research information of anti-ulcer activity of *Cucumis sativus* L.

1. To assess the ethanolic extract of *Cucumis sativus*'s anti-ulcer properties in an Aspirin induced ulcer model using wister albino rats. According to the study, the test group, received 400 mg/kg of cucumber ethanolic extract, which significantly reduced ulcer index once compared to control group. Therefore, it can be said that cucumber ethanolic extract has strong antiulcer properties [2].
2. Indomethacine-induced ulcer methods utilising Albino rats, the anti-ulcer effects of Ethanol Extract of *Cucumis sativus* (EECS) at 150 mg/kg were assessed by comparing with Ranitidine as a standard drug. In circumstances where gastric juice, hydrochloric acid, as well as neutralisation activity have been inhibited. After taking the medication, the anti-ulcer activity was noticed. One-way ANOVA and the Dunnet test were used to analyse all the data. A maximum anti-ulcer activity was discovered at 150 mg/kg of EECS, which was nearly equivalent to that of the common drug Ranitidine[12].
3. The purpose of the study was to search into the effects of a hydroalcoholic Cucumis sativus (HACS) extract on rats with gastric ulcers. Oral administration of HACS at doses of 250, 500, and 1000 mg/kg three times daily for five days prior to pyloric ligation ulceration, indomethacin, as well as ethanol-induced ulceration was used to assess anti-ulcer activity. In the control group and pre-treated groups with hydroalcoholic extract of fruit pulp of Cucumis sativus and standard drug ranitidine, various parameters including gastric volume, pH of gastric juice, ulcer index, total acidity, total carbohydrates, estimation of total proteins, total hexoses, fucose, hexosamine, salic acid, and histopathological

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parameters were examined. The extract demonstrated a significant (P<0.05) rise in pH along with a significant fall in gastric juice volume, free as well as total acidity. The antiulcer activity of Cucumis sativus fruit pulp extract in albino wistar rats has also been confirmed by histopathological research. In three models, the current study demonstrated that HACS has antiulcer activity[13].

4. The objective of the study was to look into the anti-ulcer and antioxidant properties of a methanolic extract of Cucumis sativum L. seeds. Various solvents to increasing polarity were used during the extraction process (chloroform, ethyl acetate and methanol). Pyloric Ligation (PL) as well as Water Immersion Stress (WIS) caused ulcer models in rats were used to test the in vivo anti-ulcer action of the methanolic extract of Cucumis sativum L. (MECS) seeds. Free as well as total acidity of MECS were assessed at doses of 150 and 300 mg kg-1 in the PL model gastric volume. At the same doses among both models, the ulcerative index was assessed. At a dose of 300 mg kg-1, the MECS indicated a maximum reduction in gastric acid volume, free as well as total acidity of 41, 48, and 29%, respectively. At higher doses, it was observed that the ulcerative index inhibition in the PL as well as WIS models was 52.5 and 62.7%, respectively. The findings suggested that Cucumis sativum L. seed methanolic extract had notable antiulcer potency[14].

IV. CONCLUSION

Cucumis sativus L. is a valuable medicinal plant with a wide range of pharmacological spectrum, according to a thorough review of the literature. In traditional Unani medicine, the herb cucumber (*Cucumis sativus*L.) is widely used to treat a wide range of ailments and ulcer is one of them. In various pharmacological preclinical evaluations of *Cucumis sativus*L has proven its antiulcer activity also.

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