

A Review Article on Phytochemical and Therapeutic Potential of Cucumber

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ABSTRACT:

Cucumber plant is also potent anthelmintic. Seed oil is used in treatment of insomnia and frontal headache It is a very popular vegetable crop used in Indian This vegetable is very high in water content and very low in calories.seeds can be used as an alternative water additive because of nutrients and antioxidant bioactive potency.

KEYWORDS: Morphology, Pharmacology, Phytochemical

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I. INTRODUCTION:

Cucumis, C. is a popular plant of Cucurbitaceae family which has easy access and very cheap. It is helpful in treating various ailments like diabetes, skin infection, toothache, diarrhea, flu, hepatitis inflammation e.t.c [1,2,3] Beside this it also acts as cosmetic as a toner and gives a shiny glow to skin it contains number of Phytochemicals which makes it a wonder drug. [4,5]

Taxonomical classification

Kingdom	Plantae
Division	Mangoliophyta
Class	Mangoliopsida
Order	Cucurbitales
Family	Cucurbitaceae
Genus	Cucumis
Specis	C. Sativus

Vernacular Names- English: Cucumber, **Chinese:** HuangGua, **Hindi:** Kheera, **Marathi:** Tavsini,

Malayalam: Vellari, **Sanskrit:** Sakusa

Morphology

Cucumber is an annually creeper, with yellow flowers leaves are simple petiolate type with alternate arrangement. male flowers are found in clusters. fruit is cylindrical elongated and have tapered ends it is large up to 60cm long and 10cm in diameter. [6,7]



Figure.[1].



Figure.[2]

1. Antioxidant activity

C. sativus fruit water extract showed maximum antioxidant and analgesic effect. The analgesic effect was compared to Diclofenac sodium (50mg/kg) and free radical scavenging as compared to ascorbic acid.[8] Cucumber fruit extracts showed maximum antioxidant effect at 500 µg / ml each.[9]

2. Anticancer activity

Cancer is a very fatal disease in this the cells start mutating and they grow uncontrollably. [10] studies were conducted on ethanolic extract of cucumber leaves and it showed the presence of various Phytochemicals like proteins, glycosides, saponin, terpenoids, e.t.c which help in treating the cancer.[11]

3. Anti-inflammatory activity

For testing anti inflammatory activity the rats were grouped into four groups (1-4) of four rats each, were acclimatized for seven days, fasted and deprived of water for 18 hours. Anti-inflammatory test substance was orally administered 1 h before inducing inflammation. and it was found that *cucumis sativum* had inflammatory activity and unlike synthetic drugs had no close dependent side effects[12]

4. Analgesic activity

Analgesic testing was done on methanol extract of cucumber on mice and studies revealed that methanol extract of cucumber was able to inhibit pain by 54.72% and 55.66%, as compared to the administration of Na-diclofenac (76.41%) [13].

5. Anti hepatotoxic activity

Hepatotoxic compounds can damage the liver as the liver is responsible for carrying out the metabolic activity of the body. so hepatotoxic activity testing was done on rats in which researchers injected the juice of cucumber and reported the protective effect on the body with the activity value of the enzyme alanine aminotransferase (ALT) 125 IU/L, aspartate aminotransferase (AST) 53 IU/L and blood urea nitrogen (BUN) 18.8 mg/dl [14]

6. Antidiabetic activity

Diabetes is a disease caused by lack of insulin in the body, Studies were done[15] on hydroalcoholic extract of cucumber seeds (22.5-33.8%) and butanol extract of cucumber seeds (26.6-45.0%) and it was found that it controlled weight loss in diabetic rats and reduced the blood glucose levels after nine days of treatment. Glibenclamide can reduce blood glucose levels in normal rats (27.8-31.0%) and diabetic rats (36.0- 50.0%) after nine treatment days. It suggests that the hydroalcoholic and butanol extracts of cucumber seeds effectively reduce blood glucose levels in diabetic rats.[16]

7. Anti-microbial activity

The amine fraction of an extract of 10-day old cucumber seedling showed inhibitory effect on *Staphylococcus aureus* and *Pseudomonas aeruginosa*. This activity was due to polyamine spermidine in the extract. [17]

8. Wound Healing Activity

Studies show that aqueous extracts of *Cucumis sativus* have good effect on wound healing. Herbal paste preparation showed significant ($P < 0.05$) enhancement on maturation, wound contraction and epithelialisation [18].

Other uses

Cucumber is not a medicine but it is also used as a traditional toner since time immemorial. It reduces the puffiness, dark circles of eyes inflammation, irritation if slices of cucumber are placed on the affected part or paste applied.[19,20,21].

II. CONCLUSION:

The above review gives a detailed description and it tells about the studies conducted by various researchers on cucumber. They reported the presence of various Phytochemicals like steroids, saponin, tannin, Flavonoids, alkaloids, terpenoids, phenols, glycosides e.t.c.It is a good source of secondary Metabolites which can reduce various ailments so it can be of use if the authentication is properly done.

REFERENCES:

- [1]. Kapoor LD. CRC handbook of Ayurvedic medicinal plants. Florida: CRC Press LLC; 1990.
- [2]. Sotiroudis G, Melliou Sotiroudis E, Chinou I. Chemical analysis, antioxidant and antimicrobial activity of three Greek cucumber (*Cucumis sativus*) cultivars. *J Food Biochem* 2010;34:61-78.
- [3]. J. Tang, et al., "Antimicrobial activity of sphingolipids isolated from the stems of Cucumber (*Cucumis sativus* L.)," *Molecules*, vol. 15, pp. 9288-9297, 2010.
- [4]. Ibegbulem CO, Ayalogu EO, Uzohu MN (2003). Phytochemical, antinutritional contents and hepatotoxicity of zobo (*Hibiscus sabdariffa*) drink. *Journal of Agriculture and Food Science* 1(1):335-339
- [5]. Warrier PK. *Indian medicinal plants: a compendium of 500 species*. Chennai: Press Orient Longman; 1994
- [6]. Lim TK. *Edible and Non-edible Medicinal Plants Vol-2, Fruits*. Springer. pp. 239-249.
- [7]. Kumar D et al. Free radical scavenging and analgesic activities of *Cucumis Sativus* L. Fruit extract. *Journal of Young Pharmacist*. 2(4); 2010: 365-368.
- [8]. Kumar D, Kumar S, Singh J, Vashistha BD, Singh N. Free radical scavenging and analgesic activities of *Cucumis sativus* L. fruit extract. *Journal of Young Pharmacists*. 2010 Oct 1;2(4):365-368.
- [9]. Dalimartha S. *Ramuan tradisional untuk pengobatan kanker*. PT Penebar Swadaya. Jakarta. 2003
- [10]. Muruganantham N, Solomon S, Senthamselvi MM. Anticancer activity of *Cucumis sativus* (Cucumber) flowers against Human Liver Cancer. *International Journal of Pharmaceutical and Clinical Research*. 2016;8(1):39-41
- [11]. Ezekwesili C, Nwodo OFC. Anti-inflammatory activity of *Vigna unguiculata* seed extract. *J. Med. Lab. Sci.* 2000;9:141-145
- [12]. Akter A, Begh MZ, Islam F, Afroz T, Hossain MS, Faysal M, Rahman MM. Phytochemical Screening and Evaluation of Thrombolytic, Analgesic and Antidiarrhoeal Activity of the Leaves of *Cucumis sativus* Linn. (*Cucurbitaceae*) of Methanolic Extracts. *Journal of Pharmaceutical Sciences and Research*. 2020 Mar 1;12(3):448-451.
- [13]. Dhande SR, Dongare PP, Shah PR, Joshi YM, Kadam VJ. Antihepatotoxic potential of *Cucumis sativus* and *Pogostemon patchouli* against carbon tetrachloride induced hepatotoxicity. *Indo American Journal of Pharmaceutical Research*. 2013;3(11):9212-9221.
- [14]. Prapti Utami dan Tim Lentera. *Tanaman Obat Untuk Mengatasi Diabetes Mellitus*. Jakarta. AgroMedia Pustaka. 2003
- [15]. Minaiyan M, Zolfaghari B, Kamal A. Effect of hydroalcoholic and buthanolic extract of *Cucumis sativus* seeds on blood glucose level of normal and streptozotocin-induced diabetic rats. *Iranian journal of basic medical sciences*. 2011 Sep;14(5):436-442
- [16]. Khawola AF and Khuthur DS. Antimicrobial activity of amine fraction of Cucumber (*Cucumis Sativus*) extract. *Mircen Journal of Applied Microbiology and Biotechnology*. 3(3); 1987: 275- 279.
- [17]. K. Patil., A. Kandhare., D. Bhise. Pharmacological evaluation of ameliorative effect of aqueous extracts of *Cucumis sativus* L. fruit formation on wound healing in Wister rats. *Chronicles of young scientists*. 2(4), 207-213, 2012.
- [18]. K. Patil., A. Kandhare., D. Bhise. Pharmacological evaluation of ameliorative effect of aqueous extracts of *Cucumis sativus* L. fruit formation on wound healing in Wister rats. *Chronicles of young scientists*. 2(4), 207-213, 2012.
- [19]. Mazid Mohd., T. A. Khan and F. Mohammad. *Medicinal Plants of Rural India: A review of use of medicinal plant by Indian Folks*. *Indo Global J. of Pharm. Sci.*; 2(3): 286-304, 2012.
- [20]. P.K. Mukherjee. *Quality control of herbal drugs an approach to evaluation of botanical*. Business Horizon Pharmaceutical Publishers.; 13, 2008.
- [21]. H. Saeed. *Traditional and Medicinal Uses of Plants of Duniapur District Lodhran*. *International Journal Of Advance Research* 5(1): 1823-1827, 2017