



Review Article

RICH SOURCE OF NEUTRACEUTICLE: *CUCUMIS SATIVUS* (CUCUMBER)

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ABSTRACT

Cucumber (*Cucumis Sativus*) belongs to Cucurbitaceae family which is abundantly found in India. It is widely cultivated plant. The fruit is used as supplementary to principal food components & also Medicine since ages. Its Diuretic function is well known and it is systematically described in *Charak* and *Sushrut samhita*. According to its stages, its different properties are described. *Cucumis Sativus* is economic and rich in carbohydrates, proteins, fibres, vitamins mainly A, B1, B2, B6, C, D, E, macro nutrients like Na, K, Ca and micro nutrients such as Cu, Ze, Fe. In addition to this, the plant has many phyto constituents like glycosides, flavones, terpenoids, phytosterol, saponine and carotene B. Fruit can be used in the form of conc. juice, slices (slices dried or fresh). It helps to promote health and cure diseases. Its fresh fruit is rich source of moisture. It can be used in place of mineral water for oral rehydration. It needs to be used in preparing squash, jam and jelly. It is also used in various cosmetics due to its high moisture content. Malnutrition is worldwide problem. Cucumber is easily available, affordable and fulfils requirements of micro & macronutrients in the body. Therefore, Cucumber can be used as food supplement in the malnutrition areas. Adulteration in synthetic food and its side effects is one of the serious health related issue. Use of Cucumber as supplementary to food helps to overcome these problems.

KEYWORDS: Cucumber, *Cucumis Sativus*, cucurbitaceae, *Shakvarga*, RDA.

INTRODUCTION

Neutraceuticals is defined as food or parts of food that provide medical or health benefits including prevention and treatment of diseases^[1]. Neutraceuticals can either be taken as dietary supplements or as functional foods^[2].

Cucumber plant has been used as food as well as medicine from the period of *Charaka*, *Sushruta* and *Nighantus*. It is included in *Shak-varga* (vegetable). This plant thrives in both temperate and tropical environment and require temperature between 60-90F⁰/ 15-33C⁰. Hence, they are native to many regions of the world.^[12]

In *Sushrut samhita* & *Shaligram Nighantu*, different stages of fruits are described. Fresh and immature Fruits are *Laghu* (light), *Sheeta* (cool), helps in elimination of thirst and burning sensation in body where as Ripen fruits are sour in taste, hot & aggravates burning sensation of body.

PLANT DESCRIPTION

A climber having minute hairs on it. Leaf is rounded, divided in five angles covered with hairs. Flowers are small, yellow coloured. Fruits are 4-12 inches long, 1-1.5 inches thick, green, yellowish and orange coloured also. Seeds are multiple in number, oval shaped, white coloured.

TYPES

According to *Sushruta* (1). *Trapusa* (2). *Ervaru* (3). *Karkru* (4). *Shirnavarnta*^[4].

(1). Slicing (2). Pickling (3). Burpless^[10]

TRADITIONAL ACTION AND USES

Madhura (sweet) *Rasa* (taste), *Sheeta* (cool), *Veerya* (Potency), *Pittashamaka*, *Vatakaphalkar*^[5]. Fruits are cool and refrigerant. Seeds are cool, refrigerant, diuretic and blood purifier. Sometimes fruits are bitter in taste, emetic and diuretic in nature. Bitterness of Cucumber is due to formation of two Cucurbitacins (terpenoid compounds). This is concentrated just under the skin of fruit. Low temperature enhances bitterness.^[10]

- (1) In insomnia and headache, oil of seed is applied on skull.^[9]
- (2) Bone fracture-milk medicated with fruit pulp is recommended.^[4]
- (3) Elimination of thirst.
- (4) In anaemia, bleeding tendencies of body, cucumber pulp and honey is used.
- (5) Seeds are diuretic. Useful in dysuria, and urinary stones. In dysuria & burning sensation of urine seed pulp is applied on supra pubic

region. Seeds macerated in rice water (water used after washing rice) are eaten.^[7]

- (6) *Bhavamishra* prescribed "*Bhadravaha Ghrita*" in urinary tract infection, in which one of the content is Cucumber seeds.^[8]

(7) Cucumber fruit having sweet taste (*Madhur rasa*) is anti emetic in nature.^[6]

- (8) Cucumber fruit acts as anti-inflammatory. Fruit is cut vertically, some quantity of salt is added in it & it is applied on inflammation.^[5]

Nutritional Contents ^[27]

Table1: Nutritive value per 100gm of *Cucumis sativus*

Principles	Nutritive Value	Percentage of RDA(Recommended dietary allowance)
Energy	15 kcal	Less than 1%
Carbohydrates	3.63gm	3%
Proteins	0.65gm	1%
Cholesterol	0mg	0%
Dietary fibres	0.5gm	1%
Folates	7 µg	2%
Niacin	0.098mg	Less than 1%
Pantothenic Acid	0.0259mg	5%
Pyridoxine	0.040mg	3%
Riboflavin	0.033mg	3%
Thiamin	0.027mg	2%
Vit A	105IU	3.5%
Vit C	2.8mg	4.5%
Vit E	0.03mg	0%
Vit K	16.4µg	13.6%
Sodium	2mg	0%
Potassium	147mg	3%
Calcium	16mg	1.6%
Iron	0.28mg	3.5%
Mg	13mg	3%
Mn	0.07mg	3.5%
P	24mg	3%
Zn	0.2mg	2%
Carotene B	45µg	
Cryptoxanthin B	26µg	
Lutein Zeaxanthin	23µg	

(Source: -USDA National Nutrient Data)

Except these the plant has many phytoconstituents i.e. Glycosides, flavones, terpenoids, phytosterol, saponine etc. It is observed that percentage of protein, fibres, carbohydrates in dried cucumber would be better than fresh cucumber while only the moisture percentage varies ^[11].

Fresh-92.5gm/100gm

Dried-36.65/100gm

Role of various nutrients in body^[13]

Vit A: Prevention factor of night blindness

Vit B1: Anti Beri-Beri, Antineuritic factor

B2: Stomatitis preventing factor

B3: Filtrate factor

B6: Antidermatitis factor

Vit C: Antioxidant factor

Vit D: Antirachitic factor

Vit E: Antisterilitic factor

Vit K: Antihaemorrhagic factor

Niacin: Pellagra preventing factor

Table 2: Deficiency of macro nutrients^[13]

Deficiency	Diseases
Ca	Rickets, Tetany
P	Phosphorous rickets
Mg	Tetany, vascular disturbances, convulsions, death
Fe, Cu, Mn	Secondary anaemia

Table 3: Pharmacological Activity

Antibacterial activity (S.aureus, P.aeruginosa)	Seed extract of Cucumis seeds	[15]
Antifungal activity	Ethanol extract of Cucumis seeds	[16]
Antacid activity & Carminative activity	Aqueous extract of Fruit pulp of <i>C. sativus</i>	[17]
Activity against Ulcerative colitis	Aq. Extract of Fruit of <i>C. sativus</i>	[18]
Haepatoprotective activity	Aq. extract of fruit of <i>C. sativus</i>	[19]
Hypoglycemic & Hypolipidemic Activity	Ethanol extract of fruit of <i>C. sativus</i>	[20]
Wound Healing Activity	Aqueous extract of fruit of <i>C. sativus</i>	[21]
Antibacterial, (Gram + ve & Gram-ve), Antifungal (V.Parahaemolyticus, Saccharomyces, Candida albicans & Aspergillus niger) & Cytotoxic activity	Ethanol, Chloroform & n-Hexane extract of <i>Cucumis sativus</i> Leaves	[22]
Emetic activity in ac. Indigestion in children.	Extract of leaves of <i>Cucumis sativus</i>	[23]
Antihelmintic activity against Tapeworms	Extract of Seeds of <i>Cucumis sativus</i>	[24]
Free radical Scavenging & Analgesic activity	Fruit extract of <i>Cucumis sativus</i>	[25]
Antidiarrhoeal activity of <i>Cucumis sativus</i>	Extract of leaves	[26]

CONCLUSION

Cucumis sativus Fruits, Seeds, leaves are useful to maintain and Upgrade health as well as it is preventive and curative of various diseases. It can be used in fresh and raw form or can be used by preserving dried slices method. *Cucumis sativus* is the plant which fulfils nutritional as well as medicinal requirements.

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