

Journal of Drug Discovery and Therapeutics

Available Online at www.jddt.in

CODEN: - JDDTBP (Source: - American Chemical Society)

Volume 12, Issue 06; 2024, 83-86

Review of Pharmacological and Pharmacognostical Activity of *Cucurbita Maxima*

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Received: 22-09-2024 / Revised: 25-10-2024 / Accepted: 28-11-2024

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Conflict of interest: No conflict of interest.

Abstract:

Pumpkin belongs to the family of Cucurbitaceae, which comprises several species that has economical as well as agronomical importance. All parts of pumpkin are edible and laden with beneficial nutraceutical compounds. Pumpkin seeds are valuable source protein which can help in eradicating protein malnutrition and lipids (rich in PUFAs) contains essential as well as non essential fatty acids which prevents from various ailments like cancer and other cardiovascular diseases. Since, seeds of pumpkin are abundant in macro (magnesium, phosphorous, potassium, sodium and calcium) and micro minerals (iron, copper, manganese, zinc and selenium), they can be used as an incredible dietary supplement which in turn helps in curbing various deficiency disorders. This review enlightens the characteristics of pumpkin seeds, process of valorization of pumpkin seeds and the effect of processing on their nutritional composition which have been studied currently with the aim to use this wonder seeds for human wellbeing. Pumpkin seeds possess many bioactive compounds like polyphenols, flavonoids, phytosterols and squalene which makes it a lucrative raw material for pharmacological and food industries. Pumpkin seeds work as anti-depressant and helps majorly in the treatment of benign prostate hyperplasia (BHP). Daily consumption of pumpkin seeds can reduce the chances of Alzheimer's and Parkinson's disease. Pumpkin seeds are rich in tocopherols and can be used for oil extraction for edible purposes and utilized in other food formulations for future use.

Keywords: Pumpkin seeds, Antidiabetic, Antidepressant, Anticancer, Anthelmintic

INTRODUCTION

1. Plant Profile: - *Cucurbita maxima*

A pumpkin seed, also known as a pepita (from the Mexican Spanish: pepita de calabaza, 'little seed of squash'), is the

edible seed of a pumpkin or certain other cultivars of squash. The seeds are typically flat and oval with one axis of symmetry, have a white outer husk, and are light

green after the husk is removed. Some pumpkin cultivars are huskless and are grown only for their edible seed. The seeds are nutrient- and calorie-rich, with an especially high content of fat (particularly linoleic acid and oleic

acid), protein, dietary fiber, and numerous micronutrients. Pumpkin seed can refer either to the hulled kernel or unhulled whole seed and most commonly refers to the roasted end product used as a snack. [1]



Figure 1: *Cucurbita maxima* (Pumpkin Seeds)

Common Name	Kaddu, Kumhra, Meetha kaddu
Division	Spermatophyta
Sub – Division	Angiospermae
Class	Dicotyledonae
Sub – class	Poly patellae
Series	Caliciflorae
Order	Passiflorales
Family	Cucurbitaceae
Genus	Cucurbita
Species	Maximus

2. Taxonomy of *Cucurbita maxima*:

3. General Background:

Crops

The pumpkin is grown in warm climates from 20 to 27 °C, as it is a sensitive product to cold and frost. In Chile, the cultivation area is located in the central region and the northern center of the country, especially the Metropolitan, Libertador Bernardo O'Higgins, Maule and Coquimbo regions. The *Cucurbita maxima* fruit is harvested during the months of March and April, when the ripe fruit can be properly stored for several months under conditioned cellars and reception centers, which allow the product

to be stocked throughout the whole year. [2]

Botany

It is important to know the botany of the maximum *Cucurbita* species in order to understand the differences and procedures for obtaining its by-products. Botany gives very important information from at the macroscopic level, structure and function of a vegetable. Thus, the plant will be described to understand its main by-product, the seeds. [3]

4. Phytochemical Analysis:

Phytochemical analysis of *Cucurbita maxima*, or pumpkin, has revealed the

presence of many bioactive compounds, including: [4]

Flavonoids and Tannins: Found in high concentrations in the fruit juice

Phenols and Saponins: Found in moderate concentrations in the fruit juice

Terpenoids: Found in low concentrations in the fruit juice

Alkaloids, Reducing Sugars, and Tannins: Found in the seeds

Glycosides: Found in the aqueous extract of the seeds

Cardiac Glycosides, Steroids, and Fatty Acids: Found in the seeds

5. Chemical Constituents of *Cucurbita Maxima* Seeds:

Pumpkin seeds are good source of:- Vitamins- B, C, D, E, and vitamin K.

Minerals: - Zinc, Magnesium, Manganese, Phosphorous and Phytosterol.

Chemical Constituents: - 24β ethyl 5α cholesta-7, 22, 25-trien- 3β ol, 24β ethyl 5α cholesta-7, 25-dien- 3β ol, arena sterol, spinasterol, 24- ϵ methyl lathosterol and dehydro-fungisterol.

The seeds yields oil have physical chemical constituents as fatty acid composition of oil is as follow myristic, palmitic, stearic, oleic and linoleic acid.

6. Traditional Uses:

Anti-inflammatory effects: Pumpkin seeds are rich in many antioxidants, which protect your cells from disease-causing damage and reduce inflammation in your body. When they have their hulls, they're also a great source of dietary fiber, which can boost this effect. Studies show that anti-inflammatory foods can help you prevent chronic diseases, such as type 2 diabetes and heart disease. [5]

Anti-cancer properties: Laboratory studies show that pumpkin seeds can stop the growth of breast and prostate cancer cells. They may also kill cancer cells by

triggering them to apoptosis, or cancer cell death. Researchers think that the anti-cancer activity of pumpkin seeds may be due to the high antioxidant levels in the seeds. But more research is needed to see how pumpkin seeds work in people to stop cancer cells from growing or to kill cancer cells. [6]

Improved Prostate Health: Several studies have shown that pumpkin seeds may help ease the symptoms of benign prostatic hyperplasia (BPH). BPH is a condition where your prostate gland is swollen. This can cause it to press against your urethra and irritate your bladder. People with BPH may feel as if they have to pee all the time or they may be unable to completely empty their bladder. [7]

Healthy Heart Function: The high magnesium content in pumpkin seeds helps lower your blood pressure and keep it steady. Thanks to this effect, diets high in magnesium are linked to a lower risk of stroke and death from heart disease. Studies show that the antioxidants in pumpkin seeds also increase nitric oxide levels in your body. This molecule works to keep your blood vessels smooth, flexible, and healthy, improving blood flow and reducing the risk of heart and circulation problems. [8]

Better Sleep: Snacking on pumpkin seeds before bed may help you get a better night's rest. Pumpkin seeds are a natural source of tryptophan, an amino acid that promotes sleep. The zinc, copper, and selenium in pumpkin seeds can also affect sleep duration and quality. Finally, studies show that magnesium can help reduce stress and anxiety, contributors to insomnia. [9]

Improved Sperm Count: A study in mice that had lost the ability to produce sperm due to treatment with a chemotherapy drug showed that pumpkin seeds helped restore their ability to make sperm. The mice ate 200 milligrams of pumpkin seed extract per kilogram of body weight every day for

40 days. Researchers think that the antioxidants in the seeds helped prevent some of the damage from the chemotherapy drug. These results are promising as a way to help people who take chemotherapy keep their fertility. But more research is needed to see if it will work this way in people. [10]

Summary:

Pumpkin seed kernels contained moderate concentrations of minerals, especially P, Mg, and K. The amino acid profiles indicate that methionine and tryptophan were the most limiting amino acids, while arginine, glutamic, and aspartic acids were the most plentiful amino acids. The high oil and protein content makes the seed a potential source of commercial vegetable oil and protein. As an anthelmintic, especially against worms of the genera *Ascaris*, *Taenia* and *Oxiuris*. Water extracts of areca nut and pumpkin seeds are used for the treatment of heterophyiasis. Pumpkin seeds are also employed as a mild diuretic and to treat childhood enuresis.

References:

1. Popovic M., On growing squash and pumpkin (*Cucurbita* sp.) in yougoslavia, *Savremena Poljoprivreda*, 1971, 11; 59-71.
2. Martínez Y, Valdivié M, Solano G, Estarrón M, Martínez O, Córdova J. Efecto de harina de semilla de calabaza (*Cucurbita maxima*) en el colesterol total y ácidos grasos de los huevos de gallinas ponedoras. *Rev Cuba Cienc Agric* 2012; 46(1): 73-78
3. Valencia M. Tesis Situación actual y perspectivas del zapallo chileno camote (*Cucurbita maxima* Duch): germoplasma, prácticas agronómicas y análisis económico del cultivo. Valparaíso, Chile: Facultad de Agronomía PUCV, 2006
4. Amin, M.Z.; Islam, T.; Mostofa, F.; Uddin, M.J.; Rahman, M.M.; Satter, M.A. Comparative Assessment of the Physicochemical and Biochemical Properties of Native and Hybrid Varieties of Pumpkin Seed and Seed Oil (*Cucurbita Maxima* Linn.) . *Heliyon* **2019**, 5, e02994.
5. Jia W., Gao W. and Tang L., Antidiabetic herbal drugs officially approved in China, *Phytoether Res.*, 2003, 17; 1127-1134.
6. Adolfo A.C. and Michael H., Mexican plants with hypoglycemic effect used in the treatment of diabetes, *J. Ethnopharmacology*. 2005, 99; 325-348.
7. Ambasta S.P., *The Useful Plants of India*, Publications and Information Directorate, Council of Scientific and Industrial Research, New Delhi, 1992; 149.
8. Agarwal V.S. and Agarwal D.D., *Fruit Drug Plants of India*, Kalyani Publishers, New Delhi, 1991; 73-74
9. O. Ginsburg, "Manifesto for global women's health," *Nat. Rev. Clin. Oncol.*, vol. 15, pp. 3–4, 2018.
10. A. A. Hesam, L. Taghipour, S. Rasekhi, S. Fallahi, and Z. Hesam, "Investigating the multiple aspects of mental health in infertile women," *Int. J. Ment. Health Addict.*, vol. 15, pp. 928–932, 2017.