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A comprehensive review of Kaddu (Pumpkin) as a potent nutraceutical in Unani system of medicine

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Abstract

In the Unani medical system, medications derived from plants have been essential for both disease prevention and treatment. Because of their inexpensive cost and little side effects, these medications are growing in popularity. Kaddu, a member of the Cucurbitaceae family, is one such medication. Consuming kaddu, a popular salad vegetable, provides numerous health advantages. Since they can withstand high temperatures rather than cold, cucurbits are a significant and diverse category of vegetable crops that are widely grown in warm subtropical and tropical regions as well as situations with lots of water. But during blossoming, it can withstand frost and dryness alike. It is an important herbal drug and various parts of the drug such as fruit, fruit stalk, kernel, seeds are used medicinally to alleviate several ailments, such as Musakkini (Analgesic), Mubarrid (Refrigent), Mudire bol (Diuretic), Dafe hararat (anti pyretic) Dafe tashannuj (Antispasmodic), Musakkine auja (Analgesic), Musakkine atash (Thirst relieve) etc. It is also used as preventive treatment during epidemic /pandemic spread and also play a role of very useful nutritional material. Several activities such as sedative, hypoglycaemic, anti-inflammatory, antioxidant have been validated. These activities may occur due to the presence of chemical constituents like tannins, cardiac glycosides, terpenoids, carbohydrates, resins, polysaccharides, para-aminobenzoic acid, fixed oils, sterols, proteins, peptides saponins, carotenoids and phytosterols. Kaddu can potentially act as a strong traditional herbal drug due to its multiple pharmacological effects and is therefore generating interest in drug discovery and development of formulations. The present review provides a summary of recent knowledge of significant traditional uses, phytochemical, and pharmacological activities of various parts of the plant.

Keywords: Potent nutraceutical, Kaddu, unani system of medicine

Introduction

Plants have been used to cure diseases and infections since ancient times. Medicinal plants are cheap, easily available and affordable remedy for various ailments. The medicinal importance of plants lies in some of the active chemical substances that produce a specific action on human body. The most essential of these bioactive components of plants are alkaloids, saponins, tannins, flavonoids and phenolic compounds. The genus *Cucurbita* belongs to Cucurbitaceae family. Fruit of *Cucurbita maxima* is the largest known fruit of all flowering plants, and are often used in contests for the largest pumpkin category^[1]. Kaddu or Cucurbita is a well-known traditional Unani herbal remedy^[2]. The Cucurbitaceae family also referred as cucurbits form a very large group with approximately 130 genera and 830 species^[3]. All of the cultivated species are found in subfamily Cucurbitoideae. Many species are used medicinally across the globe viz. *Cucurbita maxima*, *Cucurbita pepo*, *Cucurbita moschata* etc.^[2]. The fruit, fruit pulp and seeds of Kaddu are extremely variable in terms of antioxidant and nutritional potential^[4]. In Unani classical literature extensive description of kaddu has been mentioned highlighting its versatile medicinal and nutritional benefit^[3]. The immature fruits are consumed as a vegetable. The mature food is sweet and used to make confectionery, beverages^[2]. The verse "Asaffat Surah" in the Holy Quran discusses the importance of cucurbita in reference to Prophet Younus. God states: According to Surah Asaffat ayat 146, we planted a Cucurbita bush on his body so that it might rest beneath its broad, wet leaves. The Almighty God planted a pumpkin tree where younus was hurled from the whales' bellies. Prophet Younus, who endured a prolonged period of terror, starvation, and dehydration inside the massive marine creature, found great benefit from this herb^[5]. Cucurbita seeds and leaves are usually applied topically as poultices. The seeds are said to possess anthelmintic qualities^[6].

Oil is dark green in colour which contains high amount of free fatty acids^[7]. Pumpkin has been suggested for insomnia as nasal drop^[8]. Antidepressant drugs used for the depression treatment may cause side effects such as vomiting, nausea, irritation, etc. To overcome this, natural medicines are used for treatment which will have very less side effects. Pumpkin seed raw as well as processed could reduce the depression^[9]. Avicenna suggest that applying Roghan Kaddu on forehead and temporal regions will help in promoting sleep^[10].

Vernacular Names (*Mutardifat*)

Banda: Chuchu, Saimbere, Sevi; **Unani:** Qaroonā, Falunia, Qarunan, Qoluqia, Qoluqati; **Bengal:** Saphurikorma; **Bombay:** Lalbhopali, Laldudiya; **Brazil:** Aboboreira grande, Jurumu, Moranga; **Burma:** Shwepayon; **Canaress:** Kumbala; **Deccan:** Mithakaddu; **Dutch:** Pompeon; **English:** Melon, Musk Melon, Pumpkin, Red Gourd, Squash Gourd; **French:** Bonnet d'electeur, Cource, Cource potiron, Potiron, Potisson, Poturon; **Fulah:** Budi; **German:** Reisenkuerbis, Speisekuerbis; **Gujarat:** Koron; **Hindi:** Kadu, (jangli kaddu, sitaphal, Lamba kaddu, Ghiyya, Loki, Aal, gadili Mithakaddu; **Hova:** Voatavo, Voatavohoka; **Italian:** Cucuzza; **Kangra:** Tookmkudu; **Konkani:** Dudi, Dudni; **Languedoc:** Corcoita; **La Reunion:** Citrouille du Cap; **Madras:** Perumpusuni; **Malayalam:** Mattanga; **Malinke:** Guie; **Manjia:** Chuchu puru ngato; **Mexico:** Calabaza, Tamalayota, Tamalayotli; **Moldavia:** Bostan; **Mundari:** Bondeakakaru, Kakaru, Kakru; **New Caledonia:** Kavepoaka; **North-Western Himalayas:** Guduwa; **Portuguese:** Abobora amarella, Abobora do telhado; **Roumanian:** Curcubata, Dovieae; **Russian:** Krugalayatikva; **Sanskrit:** Dangari, Gramya, Gudayogaphala, Kushmanda, Pitakushmanda, Pitaphala, Pitapushpa; **Sinhales:** Kumbala, Ratalabu, Wattaka; **Sousaou:** Nalingni; **Spanish:** Calabaza; **Tagalog:** Calabazangbilog, Calabazangpula; **Tamil:** Pushini, (Sorakai UPI6); **Telugu:** Gummadi; **Arabic:** Q'ra Faluna Muhaddba; **Urdu:** Kaddu; **Persian:** Khyar-e-kaddu, Kaddu daraz; **Bangali:** Kumra; **Marathi:** Kali-Dudhi, Kashiphal, Kala Bhopala^[6, 12-16, 18-22].

Scientific classification

Kingdom: Plantae

Phylum: Magnoliophyta

Class: Magnoliopsida

Order: Cucurbitales

Family: Cucurbitaceae^[11]

Habitat

Originally from northern Mexico and the eastern United States, it is now widely grown in northern India^[2, 6]. While *C. maxima* is primarily grown in the highlands and subtropical parts of India, *C. moschata* is planted practically everywhere in the country. In most of India, the summer and rainy seasons are the prime times for growth. Certain regions of Western and Southern India also cultivate winter pumpkins^[23]. *Cucurbita moschata* is a huge, spreading annual herbaceous climber with tendrils that is grown in tropical and subtropical regions of India. It is grown for the fruits, which are then consumed as vegetables^[14]. There is a large variation in the size and shape of pumpkin fruits and the average fruit weight fluctuates between 8 and 10 kg;

sometimes even up to 20 kg have been noticed^[23].

Part Used (*Juze Mustemala*)

Phal (fruit)

Fruit stem, pulp

Roghan-e-kaddu

Tukhm-e-kaddu (seeds)

Maghz-e-tukhm-e kaddu (kernel)^[6, 12-14, 19, 24, 25]

Temperament (*Mizaj*)

Tukhm-e-kaddu sheerein (seed) cold and moist in 2nd degree

Roghan-e-kaddu (oil): Cold in 2nd degree and moist in 1st degree.

Phal (Fruit): Cold and moist in 2nd degree^[2, 13, 16, 20, 21].

Morphology

The fruit of climber is half yard long and round in shape. The colour of the fruit is green on the outside and white on the inside. And is tasteless. A type of it's also seen which has two stomach. Root is thin and long^[13]. Surface is smooth, glossy, a groove or slight depression on one side: no characteristic odour and taste sweetish oily^[14]. The pumpkin is most likely cultivated throughout India and in most warm region of the world^[6]. It is a heavily branched annual herbaceous plant with creeping or climbing branches. Its leaf blade has a large oval form and an angular stalk. These leaves are simple, alternating, and stipule-free. The petiole lengths range from 9 to 24 cm, with a deep sinus at the base and an outline that is almost oval in shape rather than pointed or heavily lobed. Predominantly, the corolla has soft, obtuse, roughly cylindrical, crinkly, or hanging lobes; the tube has parallel sides or bulges at the base; the peduncle is short, spongy, almost cylindrical, and does not expand when it attaches to the fruit^[6]. Flowering is asynchronous with male flowers that are solitary, it has 3 stamens with free threads, and the anther is usually supported by long twisted organ with a very long peduncle. The female flower is always solitary and has 3 stigmas supported by a thick style, an inferior ovary and a short stalk. Yield and yield components such as average fruit weight, fruit diameter and fruit length are traits of interest for improving pumpkin productivity^[5]. Pumpkin is generally grown for its leaves, flowers, fruits and for its oil seeds. It is low calorie vegetable suitable for any diet. The pumpkin is an important source of Vitamin A. Thus, it plays a vital role in the fight against vitamin A deficiency which affect more than 250 million children under 5 years of age worldwide. It has a large quantity of ascorbic acid (22.9 mg/100 g) and inhibit the development of degenerative diseases such as cancer, diabetes, cardiovascular and neurological diseases. But despite these strengths, it has been neglected by institutional researchers^[26].

Macroscopic characteristics: Compressed, ovoid or oblong, white to cream in color, approximately 10 mm in length, 5 mm in width, and 2 mm in breadth: Smooth, shiny surface with a little depression or groove on one side; flavor is sweetish-oily with no distinct smell.

Microscopic characters: T.S. of kernels shows single layer of inner epidermis of the testa followed by cotyledons consisting of polygonal parenchymatous cells containing

aleurone grains and abundant oil globules: outer epidermis of cotyledons single layer, innermost two layers much more elongated palisade like cells and distinct each cotyledons shows five distinct patches of small thin walled polygonal cells present midway in a roughly trapezoidal shape. Powder: Cream, palisade like elongated cotyledonary parenchyma cells from the inner most layer of cotyledons, cotyledonary parenchyma containing aleurone grains and oil globules and spiral vessels upto 40 micro gram (14).

Physicochemical Studies

Foreign matter: Not more than 2 percent.

Total ash: Not more than 4 percent.

Alcohol soluble extractives: Not less than 52 percent.

Water soluble extractives: Not less than 9 percent.

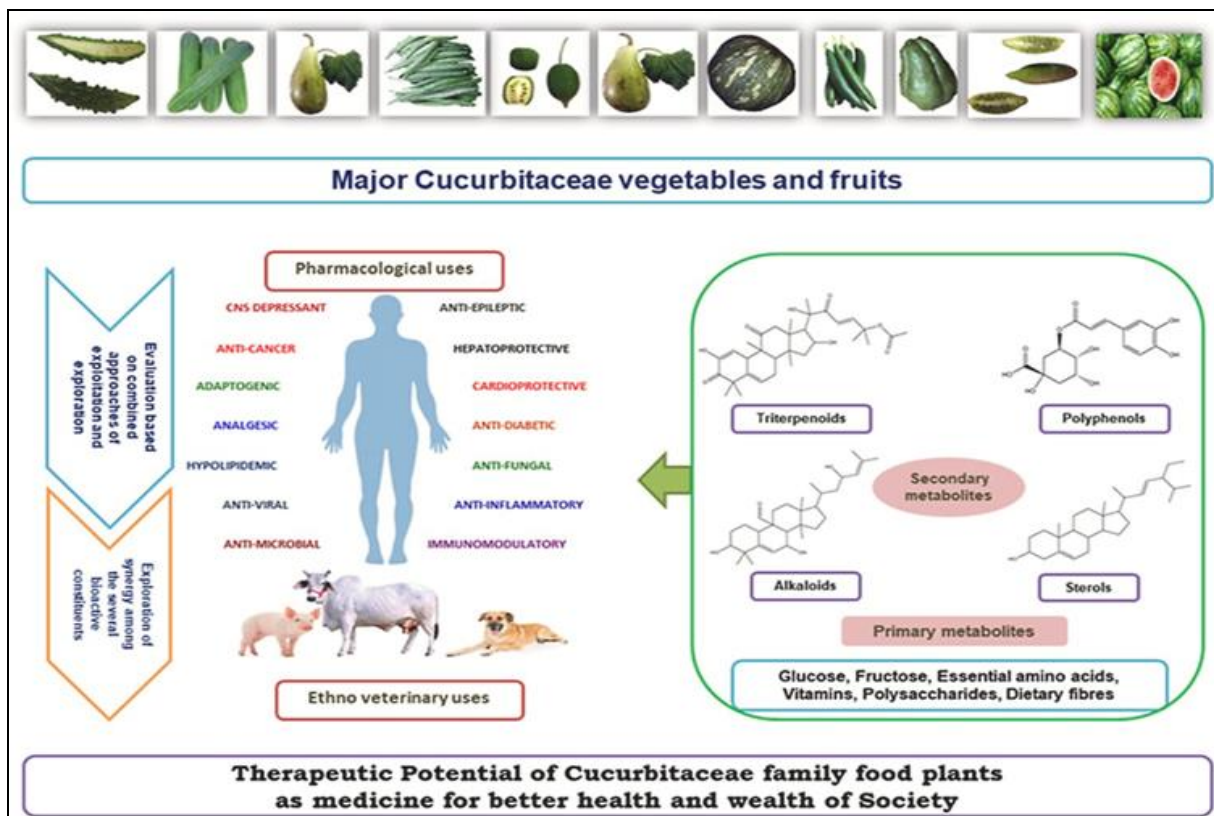
Loss in weight on drying at 105 °C: Not more than 8 percent [21].

Secondary fermented melon substrates had higher FFA than primarily fermented melon seeds. The highest value (26.36 mg/g) was obtained in CP during 144h into secondary fermentation while the least value (21.27 mg/g) was recorded for CC. Such trend has been observed by during fermentation of melon seeds and by for fermentation of

fluted pumpkin. The increase in free fatty acid is indicative of the production of lipases by the fermenting bacterium. This is compatible with what is known about fermentation by *Bacillus* species. Such observations have been made by previous workers. Generally, secondary fermentation had higher FFA than primary fermented melons. Though obtained a contrary result in their work, with unfermented melon seeds having a higher fatty acid than the fermented; *C. lanatus* (52.10 mg/g 38.40 mg/100 g) and *C. vulgaris* (53.50-43.20 mg/100 g) [35].

Phytochemistry [27]

The naturally occurring, non-nutritive chemical components of plants are known as phytochemicals, or phytochemicals are compounds that are produced from plants. Pumpkin's many physiologically active components have led to its reputation as a health food [37]. The existence of several phytochemicals, including tannin, cardiac glycosides, terpenoids, carbohydrates, resin, polysaccharides, para-aminobenzoic acid, fixed oils, sterols, proteins, peptides, saponin, carotenoids, and phytosterols, has been confirmed by phytochemical study of this plant, which is a member of the cucurbitaceae family. Glycosides are essential to many aspects of living things [6].



Fruit

The fruit is large berry. The shape of fruit of pumpkin varies from globular to ovoid. The fruit stalk is hard angular with five ribs clearly widened at the apex. It has flattened seed shape. The flowers are eaten as vegetable. These are characterised by a low content of fat (2.3%), carbohydrates (66%), proteins (3%) and high carotenoids content. The mineral analysis indicated that pumpkin pulp contained high level of Mn (0.5 mg/kg), Fe (1.37 mg/kg), Cu (3.9 mg/kg), Pb (0.29 mg/kg), P (11.38 mg/kg), Ni (0.5 mg/kg), Ca (179 mg/kg).

Seeds

One wholesome, well-balanced source of protein is pumpkin seeds. They are incredibly filling and stimulating. Because pumpkin seeds have a high amount of zinc, they help promote healing [40]. It is recognized that pumpkin seed oil is both a nutraceutical and an edible oil. Pumpkin seeds are highly prized and used in many different ways around the world. Together with saturated fatty acids including palmitic, stearic, oleic, and linoleic acids, pumpkin seed oil also contains mono and polyunsaturated fatty acids. They are an abundant natural supply of proteins, polyunsaturated

fats, antioxidant vitamins, carotenoids, tocopherol, and other components. (burn wound healing action). The primary fatty

acid components of seed oil include palmitic, palmitoleic, steric, oleic, linoleic, linolenic, and gadoleic acids^[11].



Leaves

The leaves of *C. moschata* are light green in color, simple, alternate, broadly ovate, about 23 cm long and 28 cm wide, roughly serrate, palmately lobed, highly pubescent and hairs forming a cushion on the adaxial surface^[40]. Study suggests that leaves contain secondary metabolites i.e. alkaloids, flavonoids, carbohydrate, phytosterol, tannin, saponin, steroid, gums and mucilage, fixed oils and fats, proteins and amino acid^[28].

Action (Afa'al)

Musakkin (Sedative)
Mubarrid (Refrigerant)
Murattib (humectant)
Musammine badan (fattening, anabolic, adipogenous)
Mulaiyan sadr
Musakkine safra
Mudire bol (Diuretic)
Muqawwi (Tonic)
Dafe hararat (anti pyretic)
Dafe tashannuj (anti-spasmodic, anti-convulsive)
Musakkine auja (Analgesic)
Musakkine atash (Thirst quencher)
Katile deedan (antihelmintic, vermicide)
Dafe suaal haar (Anti-tussive)
Muqawwe meda (Stomachic)
Munawwim (hypnotic)
Mufarreh qalb (Exhilarant)^[2, 6, 12, 14, 16, 18-22, 24]

Therapeutic uses (Mawaqe Istemal)

Qurooh (Ulcer), Mufatteh Sudad (Deobstruent), Yarqan (Jaundice), Zarb-wa-Khilfah (Sprue/Malabsorption Syndrome). Seeds are used as diuretic and given in gonorrhoea, urinary diseases, irritated bladder condition, micturition problems of benign prostatic hyperplasia stages 1 and 2. An infusion of seeds (2-3 teaspoons) is taken as a diuretic and in hypertrophy of prostate. It has long been a popular remedy for worm in Europe. Other uses include: Sehar (Insomnia), Suda (Headache), Khafqan (Palpitation),

Iltihabe haad (acute inflammation), burn and scald, Humma (fever), Malenkholia (malencholia), Saraa (epilepsy), Muqawwi dimag (nervine tonic), Shaqeeqa (migraine), Atash (Polydipsia), Suaal (Cough), Sozish bol (burning micturition), Asr bol (Dysuria), Warm halaq (Pharyngitis), Barsaam (Diaphragmitis), Ashob chasm (Conjunctivitis), Kasrat ahtlam^[2, 6, 12, 13, 16, 18, 19, 21, 22, 24].

Toxicity and Adverse effect (Muzir)

Harmful to cold temperament and bladder. It produces colicky pain, flatulence, and delayed digestion Harmful for Balghami and Saudavi temperament^[18, 19, 21]

Correctives (Musleh)

Nabaat safaid (crystalline sugar)
Shehad khalis (honey)
Ood hindi (agarwood)
Qaranfal (clove)
Sonf (fennel)
Roghan badam (almond oil)^[18, 19, 24, 25]

Taste (Maza/ Zaiqa)

Sweet^[6]

Therapeutic Dose (Miqdaar Khuraq)

Tukhm (Seed) 3-5 maasha.
Roghan (Oil), 10masha to 2 tola^[13, 24].

Substitute (Badal)

Tukhm e khayarain (cucumber seed)
Tukhm e tarbooz (melon seed)
Palak (spinach)
Kharfa (sweet gourd)
Petha^[13, 18, 24]

Compound Formulation

Showing dose and method of administration and indication of compound formulation having kaddu seeds as one of the important ingredient

S.N.	Name of compound formulation	Form of compound	Dose and method of administration	Indication
1.	Qurs Atash	Tablet	5-10 gm/orally	Atash e Mufrit, Humuzat e Meda ^[29]
2.	Qurs khaskhas	Tablet	5-10 gm/orally	Suaal e Yabis, Surfa, Tap, Nafsul Dam ^[29]
3.	Majoon arwah	Confection	1 gm with maul-Laham do Aatsha (60)	In zof e Bah and Zof e Aaza e Raesa ^[30]

			ml) or milk (250 ml)	
4.	Laboob barid	Confection	10 gm/orally	In Zof e Bah
5.	Majoon panba dana	Confection	10 gm	Muqawwi e Bah and Muwaalide Mani ^[30]
6.	Qurs sartan kafoori	Tablet	3-5 gm	Tap-e-Mohraqa, Diq, Surfa, Sil ^[29]
7.	Mufarreh yaqooti	Confection	5 gm	In Zof-e-badan, Zof-e-Qalb, Jigar wa Dimag and Khafqan ^[30]
8.	Roghan laboob sabaa	Oil	External use	In Yuboosat e Dimag, Zof e Dimag, Sahr and Barha e Auf ^[30]
9.	Dawa ul misk barid jawaharwali	Confection	5 gm/orally	Zof e Aza e Raeesa, Khafqan ^[18]
10.	Qurs kafoor	Tablet	4 tablet(775 mg)	In Tap-e-Diq and Tap-e-Muharriga
11.	Majoon muqawwi wa mumsik	Confection	Take one hour before coitus (Mubasharat) 1.5 gm with milk	In Mumsik Muqawwe bah, Zof e bah, Jiryaan and Suraate Anzal ^[30]
12.	Majoon sang sarmahi	Confection	10 gm given in morning with arq Annanas	In Hasat e Masana wa Gurda ^[30]
13.	Mufarreh sheikh ur rais	Confection	5 gm	In Zof e Qalb wa Khafqan
14.	Habbe suaal musakkin	Pill	200 mg kept in mouth	Sual ^[31]
15.	Halwa muqawwi	Confection	25 gm in the morning	In Zof e Badan, Qillate Mani, Zof e Bah ^[31]
16.	Habbe hirkate lisan	Pill	5-10 gm	In Hurkat e Lisan ^[15]
17.	Habbe luabe bahidana	Pill	500 mg	Sual e Yabis, Nazla e Haad, Sil, Sual e Muzmin ^[15]
18.	Qurs kafoor lulvi	Tablet	2-4 gm	Humma e Haad, Sil, Diq e Rewi, Ishal e Rewi ^[15]
19.	Laoq motadil	Confection	5-10 gm	Sual, Zeequn Nafs, Nazla ^[15]
20.	Laoq petha	Confection	5-10 gm	Sual e Yabis ^[15]
21.	Habbe zafran	Pill	125-250 gm	Sual, Khushunat r Halaq ^[32]
22.	Habbe baqla	Pill	1-3 gm	Nazla, Sual ^[32]
23.	Habbe maghziyat	Pill	250-500 mg	Sual e Yabis, Khushunat e Riya, Yaboosat e halq ^[32]
24.	Qurs firanjmushk	Tablet	2-3 gm	Warm e Kabid, Zof e Kabid, Yarqan ^[32]
25.	Qurs luboob	Tablet	3 gm	Zof e Bah, Qillat e Mani, Qillat e Sheer ^[32]

Pharmacological studies

Antitumor activities

Studies have demonstrated that Kaddu's rind, meat, and seed oil extracts suppress the growth of cancer cells in breast cancer (MCF7) and liver cancer (HEPG2). With an IC50 between 0.40 to 1.01 mg, the seed oil exhibits potential cytotoxicity against breast cancer (MCF7). The most effective combination against HEPG2 and MCF7 was the rind extract with isolated protein (IC 50: 0.40 mg), with the isolated protein coming in second (IC 50: 0.54 mg). HepG and HeLa cell proliferation is significantly inhibited by fruit ethanolic extract ^[5, 41].

Antimicrobial activities

Kaddu oil's antibacterial properties demonstrated a greater zone of inhibition (60%) against *Escherichia coli* and *Staphylococcus aureus*. Certain fungi are harmful and can cause a variety of illnesses. According to research by Sood *et al.*, *C. pepo* has a strong antifungal effect against *Fusarium oxysporum* and *Trichoderma reesei*. Its antifungal properties against *Saccharomyces cerevisiae* were documented by Badr *et al.* Additionally, Cucurbita exhibits antagonistic properties toward *Giardia lamblia*. ^[5, 39]

Neurological and Cognitive Performance Effects of Pumpkin Seeds

Shalan *et al.* (2020) investigated the effects of mulberry fruit extract, sunflower seeds, and pumpkin seeds in combination with exercise on memory function and neural activation biomarkers in healthy adults ^[33].

Antioxidant activities

The regular use of fruit and vegetables reduce frequency of cardio-vascular and cancer diseases. Methanol and ethanol extract of *C. pepo* seeds have antioxidant activity. The tetracyclic triterpenoids (cucurbitacins) isolated from seeds show antioxidant activity ^[5].

Hepatoprotective effects of pumpkin seeds

Hepatoprotective effects of *C. pepo* in adult male rats exposed to chronic alcohol intake for 6 weeks. In the study, it was reported that 2 ml/kg pumpkin seed oil for 42 days had a therapeutic function in a rat model through general protective molecular mechanisms ^[33].

Hypoglycaemic and hypolipidaemic

Diets rich in pectin facilitate excretion of bile acids which lead to their synthesis increase from cholesterol in the liver and ultimately reduction of blood cholesterol levels. It may suggest the addition of this plant in anti-diabetic regimens to treat human diabetes ^[5].

Anti-ulcer activity

Cucurbitacin derivative was isolated from metanol extract of powdered seeds of *C. pepo* which showed dose dependent anti-ulcer activity decreasing ulcerative index indicated the ability of the compound to protect the gastric mucosa ^[3].

Clinical studies

Analgesic activity

The hot plate method of Jacob and Bosovski was used to evaluate the analgesic activity. The time elapsed till the mouse clicks its paw or jumps was considered as the reaction time and was taken as a measure of analgesic effect. Readings were taken at 10, 20, 30, 60, 90, and 120 minutes post treatment ^[27].

Effect on prostate volume and post void residual urine

Trans abdominal ultrasonography is a reliable method for assessing prostate volume and the post void residual urine volume in patients with benign prostatic hyperplasia. Vahlensieck *et al.* observed that there was no clinically significant improvement in mean prostate volume and no relevant reduction in Post Void Residual Urine volume or PSA levels were seen.

Effect on uroflowmetry parameters

Uroflowmetry is a significant worldwide investigation tool that offers urologists a reliable, uncomplicated, low-cost, and non-invasive approach of measuring and recording the urine flow rate throughout micturition. There were significant differences in the result of various studies on the same drug it require further large clinical trial to establish the effect of pumpkin seeds on the objective parameters of Uroflowmetry [2].

Antidepressant activity

Forced Swim Pool Test (FST)

Mice were classified into 4 groups, each of 5 and then injected i.p. with solvent (control group), reference drug imipramine hydrochloride; 32 mg/kg (2nd group) and AME of *C. moschata* fruit pulp and seeds at a dose of 448 mg/kg (3rd & 4th group respectively) 30 min. before the test session. Two swim session were conducted. The animal were placed in a chamber containing water up to height of 15 cm at 25 ± 2 °C. The period of immobility during the 5 min. Test period was measured and recorded representing the depressant mood of the animal [27].

Effect on international prostate symptom score (IPSS)

International Prostate Symptom Score (IPSS) is recommended as the symptom scoring instrument it is used for the assessment of symptom severity in men with LUTS, when it is used, symptoms are classified as mild (0 to 7), moderate (8 to 19), or severe (20 to 35). None of the patients in the pumpkin group experienced drug side effects, whereas in the tamsulosin group dizziness, headache, retrograde ejaculation, and erythema with pruritus were reported [2].

Pumpkin seed oil in overactive bladder

Overactive bladder is prevalent among 36% and 43% of men or women aged 40 years or older. The result of clinical study showed that pumpkin seed oil improves urinary disorder in human suffering from overactive bladder. Although this study was not randomized double blind placebo-controlled study, the result suggest that pumpkin seed oil has potential for treatment or prevention of overactive bladder in men and women [34].

In vivo study of the effect of pumpkin oil on wound healing

Bleeding time is a basic test of hemostasis that proves how well platelets interact with blood vessel walls to form blood clots. According to the primary hemostasis test, the tested oil from pumpkin seeds seems to help blood clotting as it has shortened the bleeding time. Thus, the haemo-static effect of this tested oil reported in this work could provide an explanation for its healing effect [38].

Pumpkin seed oil on hair growth in men

Androgenic alopecia (AGA) affects up to 70% of men in later life especially aged over 50 years About 25% and 30% net increase was observed after intervention with pumpkin seed oil after 12 and 24 weeks, respectively. Blood pressure or glucose level did not have any difference among two groups. Serum-free testosterone levels were unchanged in both the groups. The effects of pumpkin seed oil on AGA is related to its inhibitory effect on 5 α -reductase and androgens in men [34].

Conclusion

Pumpkin is an edible food which can be included in our daily diet that can give various health benefits to improve our overall health. Pumpkin has various effects beneficial to health such as anti-diabetic, anti-carcinogenic, antioxidant and anti-microbial potential. There are other various health beneficial effects of pumpkin also reported such as inhibition of kidney stone formation, and hypotensive, anti-inflammatory and blood coagulatory effects. Most importantly it is cheap and easily available in developing countries. However, standardization of pumpkin and its antidiabetic component followed by a controlled clinical trial is needed. It would be a good idea to follow up the conventional consumption effects in human populations of those products in regard to numerous chronic diseases like diabetes, cancer and heart diseases. It is very important to analyse various bioactive components from plant and food components; however, very few components have been isolated and characterised from pumpkin. Over the years scientists have researched many pharmacological actions and potential uses of pumpkin and its extracts. Clearly, there is still a lot to learn about the health effects of this plant. Further studies are required to gain a better understanding of the role of pumpkin extracts in protecting against disease.

Conflict of Interest

Not available

Financial Support

Not available

Reference

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