

Beneficial Properties of Pumpkin Seed Oil as an Antioxidant Nutraceutical

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Abstract

The seeds of pumpkin are highly popular as an edible delicacy in different countries of the world and possess a high antioxidant value along with anti-diabetic, anti-carcinogenic and anti-inflammatory properties. The oil from this seed is also documented to contain high phenolic content which translates to its high antioxidant capability. Pumpkin seed oil has been envisaged as a preservative and functional ingredient in many foods, cosmetics and nutraceutical

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Belonging to the *Cucurbitaceae* family, pumpkins are very popular culinary favourites among many countries. Its seeds have been consumed either raw or roasted in many countries, including Greece and have been used in cooking and baking as an ingredient of bread, cereals, salads and cakes. As a rich natural source of proteins, phytosterols, polyunsaturated fatty acids, antioxidant vitamins, such as carotenoids and tocopherol and trace elements, such as zinc; pumpkin seed oil provides many health benefits [1]. Previously considered as an agro-industrial waste, pumpkin seeds have very interesting nutraceutical properties and its oil have been considered as a functional food in reliving hypertension, diabetes, and cancer [2].

The oil of various pumpkin species mainly contain fatty acids (FAs); namely oleic, linoleic, and palmitic acids. The oils were rich in δ -tocopherol, β -sitosterol and syringic acid [3]. A high poly unsaturated FA value and lower free FA content makes it highly suitable for use in edible purposes [4]. Pumpkin seeds contain remarkably high proportions of essential amino acids along with various elements like K, Cr, Na, Mg, Zn, Cu, Mo and Se; etc. *D-chiro*-Inositol, isolated from pumpkin has been considered as an insulin action mediator (insulin sensitiser) and has been linked to its antidiabetic activity [5]. High phenolic content and Vitamin E levels have been linked to its potent antioxidant activity which significantly increases the serous and hepatic activities of superoxide dismutase and glutathione peroxidase *in vivo* and reduces the concentration of malonaldehyde [6,7]. Remarkable anti-cancer actives have been isolated from pumpkin extracts which include; MAP2 (MW 2249 Da) and MAP4 (MW 4650 Da); which inhibited the growth of leukemia K-562 cells. A novel ribosome-inactivating protein (RIP) called moschatin isolated from mature pumpkin seed was used in the fabrication of moschatin-Ng76 immunotoxin which inhibits the growth of targeted melanoma cells M21 effectively [8,9]. Pumpkin seed oil have also demonstrated various other beneficial properties like anti-microbial, anti-hypertensive, anti-arthritis, anti-inflammatory and anti-depression activities [5].

Considering its bioactive potential, it can be stated that pumpkin seeds have tremendous potential to be used as a functional and nutraceutical product. Isolation, characterization and evaluation of different active constituents from different pumpkin species from various biological locations can provide us with multiple medicinal entities. Pumpkin seed oil possesses immense prospective to be commercially exploited as a nutraceutical supplement to boost human health.

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