Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 04, Issue: 03 (MAY-JUNE, 2024)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Nuts as Functional Foods: A Nutrient Powerhouse for Health

(*Kamaldeep Kour, Monika Sood, Julie D Bandral and Anjali Kumari)
Department of Post Harvest Management, Sher-e-Kashmir University of Agricultural Sciences and Technology, Chatha, Jammu-180009, J&K, India
*Corresponding Author's email: kamal16559@gmail.com

Nuts, also known as dry fruits, have been defined as the portion of edible seeds, with low water content and considerable amount of oil, which are usually consumed dry (Sabate *et al*, 2006). Nuts have long been revered for their nutritional richness and health promoting properties as they are packed with a diverse array of essential nutrients. Tree nuts, such as almonds, hazelnuts, cashew nuts, Brazil nuts, macadamias, walnuts, and pistachios, as well as legume seeds, such peanuts, are nutrient-dense foods each with a unique composition. In general, these foods contain healthy monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acid profiles; protein; soluble and insoluble fibers; vitamins E and K; folate; thiamine; minerals such as magnesium, copper, potassium, and selenium; and substances such as zanthophyll, carotenoids, antioxidants, and phytosterols compounds, with recognized benefits to human health (Tas *et al*, 2017). Nuts contain a number of health-promoting compounds, including macronutrients, micronutrients, fat-soluble bioactives, fibre, water-soluble vitamins such as folate, non-sodium minerals, and phenolics. Nuts are rich sources of essential nutrients, fatty acids being the predominant components (Alasalvar *et al*, 2020).

Health effects

- The consumption of nuts have been linked to numerous health benefits. One of the most important benefit is their positive impact on cardiovascular health. Regular nut consumption also associated with reduced heart disease, including lower level of LDL cholesterol, improved endothelial function, and decreased inflammation. The presence of monounsaturated and polyunsaturated fats along with other bioactive compounds, contributes to theses cardio protective effects.
- Nuts have been found to promote healthy metabolism and weight control. Nutty foods are linked to a lower body weight and a lower risk of obesity, even though they have a relatively high energy density. These satiating effects, combined with their nutrient density and ability to regulate appetite, make them a valuable component of a balanced diet for weight control.
- Nuts exhibit potential protective effects against chronic diseases such as type 2 diabetes and cancer. Their rich antioxidant content helps combat oxidative stress and inflammation, which are underlying factors in the development of these diseases. Additionally, the fiber and magnesium in nuts may contribute to improved insulin sensitivity and blood sugar control, thereby, reducing the risk of diabetes.
- They are an excellent source of protein (approximately 25% of energy) and often have a high content of L-arginine. As this amino acid is the precursor of the endogenous vasodilator, nitric oxide (NO), nut intake might help improve vascular regulation. (Huynh, 2006).

- Nuts contain fat-soluble vitamins (ascorbic acid, B1, B2, B3, B6) and antioxidants such as α-tocopherol (vitamin E), promoting better health, playing an important role against the aging process, improving brain function, and helping consumers to have healthy skin [Pinto *et al*, 2016]. The existence of vitamin C (ascorbic acid) is an important antioxidant for human colon cells

Significance

Incorporating nuts into the diet is not only beneficial for health but practical and versatile. Nuts are portable, readily available, portable, and have a long shelf life making them convenient snack options for on the go individuals. They can be consumed in various forms, including raw, roasted or as nut butters, and can be incorporated into a wide range of dishes, from salads and stir fries to baked goods and desserts.

Nuts are significant agricultural commodities in many regions, contributing to local economies and livelihoods. They are cultivated on a large scale and traded globally, providing income for farmers, processors, and exporters.

Nut production can have environmental implications, both positive and negative. Sustainable nut farming practices can support biodiversity, soil health, and water conservation. However, issues such as deforestation, water usage, and pesticide use may also arise in intensive nut production systems.

Processing of nut

Processing of nuts involves various steps to enhance their flavor, texture, safety, and shelf life. Food processing methods for nuts-

- **Cleaning and Sorting:** Nuts are first inspected to remove any foreign materials like stones, twigs, or damaged nuts. They are then cleaned using brushes, air jets, or water to remove dirt and debris. Sorting machines are often used to separate nuts based on size and quality.
- **Shelling:** Some nuts, like peanuts, almonds, and cashews, require shelling to remove the outer hull or shell. This can be done manually or using mechanical shelling machines. Shelling helps improve accessibility to the edible part of the nut.
- **Blanching:** Blanching involves briefly immersing nuts in boiling water to loosen the skins. This step is common for nuts like almonds and peanuts and helps facilitate easier removal of the skin. After blanching, the nuts are usually cooled and then passed through a blanching machine to remove the skins.
- **Roasting:** Roasting is a crucial step in nut processing that enhances flavor, aroma, and texture. Nuts are typically roasted in large ovens at controlled temperatures for a specific duration. Dry roasting is the most common method, but some nuts may be roasted with oil or other flavorings for added taste.
- **Grinding or Crushing:** Nuts can be ground or crushed to produce various products like nut butter, nut flours, or crushed nuts for baking and cooking purposes. This can be done using industrial grinders or crushers, which finely grind the nuts into a smooth or coarse consistency, depending on the desired end product.
- **Packaging:** Once processed, nuts are packaged into containers or bags for distribution and sale. Packaging materials may vary depending on factors like product shelf life, protection from moisture and oxygen, and consumer preferences. Vacuum sealing or inert gas flushing may be used to extend shelf life by reducing exposure to oxygen.
- **Quality Control:** Throughout the processing chain, quality control measures are implemented to ensure product safety, consistency, and adherence to regulatory standards. This includes regular testing for contaminants, monitoring of processing parameters, and inspection of finished products.

- **Storage and Distribution:** Processed nuts are stored in warehouses under controlled conditions to maintain freshness and quality. They are then distributed to retailers, wholesalers, or directly to consumers through various channels such as supermarkets, specialty stores, and online platforms.

References

1. Alasalvar, C., Salvado, J. S. and Ros, E. 2020. Bioactives and health benefits of nuts and dried fruits. *Food Chemistry*, **314**: 126192.
2. Huynh, N. N., Chin-Dusting, J. 2006. Amino acids, arginase and nitric oxide in vascular health. *Clinical and Experimental Pharmacology and Physiology*, **33**: 1-8.
3. Pinto D., Rodrigues F., Braga N., Santos J., Pimentel F.B., Palmeira-De-Oliveira A., Oliveira M.B.P.P. 2016. The Castanea sativa bur as a new potential ingredient for nutraceutical and cosmetic outcomes: Preliminary studies. Food Funct, **8**:201–208.
4. Sabaté, J., Ros, E. and Salas-Salvado, J. 2006. Nuts:nutrition and health outcomes. Preface. *British Journal of Nutrition*, **99**(2):447-448.
5. Taş N., Gökmen V. and Phenolic. 2017. Compounds in natural and roasted nuts and their skins: a brief review. *Current Opinion in Food Science*, **14**:103–109.