

## A Critical Review on Varieties and Benefits of Almond (*Prunus dulcis*)

Tahreem Javaid, Shahid Mahmood\*, Wajiha Saeed and Muhammad Qamrosh Alam

Institute of Food Science and Nutrition, University of Sargodha, Sargodha, Pakistan

\*Corresponding Author: Shahid Mahmood, Institute of Food Science and Nutrition, University of Sargodha, Sargodha, Pakistan.

Received: September 10, 2019; Published: October 10, 2019

DOI: 10.31080/ASNH.2019.03.0489

### Abstract

Almond (*Prunus dulcis*) belongs to family rosaceae. It is innate to the Mediterranean climate of Middle East, from Syria, Turkey, Iran and eastward to Pakistan. Bitter and sweet almond are its types. It consists of Kernel or meat, mid shell and outer green shell. Almond sources include vitamin E, copper, magnesium and high quality protein. Almond oil, milk, syrup and flour are the uses of almond. It is found to possess various pharmacological properties such as anti-stress, antioxidants, immune stimulants, lipid lowering and laxative. It is highly beneficial in stabilizing the vitality of the brain, strengthening the muscles and prolonging life. The abundant micronutrient in human diet is polyphenols, which played a vital role in the preservation of degenerative diseases such as cancer and cardiovascular disorders. The health effects of poly-phenols depend on the amount consumed and on their bioavailability. In this contribution, various phenolic compounds present in Almond and its by-products, their antioxidant properties and potential use as natural dietary antioxidant. It helps to control cholesterol, sugar level and maintain blood pressure. It is effective for weight loss and causes hunger fighting. Nausea and vomiting, Stomach pain and cramps, Problems in swallowing, Diarrhea, Itching and shortness of breath are the allergies of almond.

**Keywords:** *Prunus dulcis*; Almond; Rosaceae

### Introduction

Almond belong to rose family named as Rosaceae. They are placed in sub-family (Prunoideae or Amygdaloideae). Almond are also placed in their own family (Prunaceae or Amygdalaceae) so, it has become pretended that prunus advanced from sub-family, Spiraeoideae. Almond is a small deciduous tree whose height is about 4m-10m with the trunk and diameter is about 30cm. The early young twigs are green in color but when light is exposed to it, the color becomes purple. The length of leaves are 3-5 inches. The flowers are pale pink consist of 5 petals. The tree reaches to its maturity in autumn after 5 to 6 years of the plantings [1].

### Origin and history

Almond is instinctive to the Mediterranean climate of Middle East, from Syria, Turkey, Iran and eastward to Pakistan. In ancient times, It was spread beside the shores of Mediterranean into northern African and southern Europe [2]. Zohary and Hopf [3] Almond were one of the earliest domesticated fruit trees due to the ability of the grower to raise attractive Almond domestication. Domesticated Almond appear in Early Bronze Age (3000-2000BC). Wild Almond were harvested as food and doubtless were produced by leaching or roasted for removal of toxicity. Before cultivation and domestication. However, the sweet forms of domesticated Almond are not toxic [3]. Diamond [4] claims that a common genetic mutation causes an absence of glycoside amygdalin, and this mutant was grown by early farmers, "at first unintentionally in the garbage heaps and later intentionally in their orchards" [4].

### Types of almond

There are two types of Almond. Sweet almond and Bitter Almond. The sweet almond is edible and bitter Almond is non-edible or poisonous. The bitter Almond is slightly broader and shorter than sweet almond. Sweet almond contains 50% of fixed oil. Bitter Almond yields hydrogen cyanide. Almond consist of three parts: Kernel or meat, mid shell and outer green shell. There is a thin leathery layer known as brown skin or kernel or seed coat. Its kernel part is of high nutritional value. Almond are packed with vitamins, minerals, protein and fiber. They are eaten in raw or roasted form. They are a drupe and not considered as true nut [5].

### Nutrition

The source of Almond is vitamin E, copper, magnesium and high quality protein. They contain of high level of unsaturated fatty acids along with high levels of bioactive molecule (fiber, phytosterols, vitamins, other minerals and antioxidants) it is beneficial for cardiovascular disorders [6].

### Use of Almond (*Prunus dulcis*)

#### Almond (*Prunus dulcis*) oil

In Almond, kernel part produces fixed oil "oleum amygdalae". It is insoluble in water but soluble in chloroform and ether. It is used as a supernumerary of olive oil. Sweet almond oil is obtained from dry kernel of plant. This oil is also used for massage, anti-inflammatory, immunity-boosting and anti-hepatotoxicity effects [7].

**Almond (*Prunus dulcis*) milk**

Almond milk is of creamy texture and nutty flavor. It does not contain cholesterol and lactose. Commercially it consumed sweetened and flavors [8].

**Almond (*Prunus dulcis*) syrup**

Almond syrup is an emulsion of bitter and sweet almond. Flavors are added to it for aroma. In bitter Almond, there is cyanide present in it so modern syrup is made from sweet almond [9].

**Almond (*Prunus dulcis*) flour**

It is combined with sugar and honey. It is used as gluten-free alternative to flour wheat in cooking and baking [10].

**Minerals profile**

Nutrients	Unit	Value per100g
Water	g	4.41
Energy	k. cal	579
Protein	g	21.15
Total lipid (fats)	g	49.93
Carbohydrates	g	21.55
Fiber, dietary fiber	g	12.5
Sugar	g	4.35
Calcium	mg	269
Iron	mg	3.71
Magnesium	mg	270
Phosphorus	mg	481
Potassium	mg	733
Sodium	mg	1
Zinc	mg	3.12
Thiamine	mg	0.205
Riboflavin	mg	1.138
Niacin	mg	3.618
Vitamin B-6	mg	0.317
Folate, DFE	µg	44
Vitamin A	IU	2
Vitamin E	mg	25.63
Fatty acids, total saturated	g	3.802
Fatty acids, total monounsaturated	g	31.551
Fatty acids, total polyunsaturated	g	12.329
Fatty acids, total trans	g	0.015

**Table**  
(US Department of Agriculture and Agriculture Research Service, 2018)

**Nutritional value**

Almond is commonly known as badam, a nutritious food.it is rich in healthy fats, proteins, minerals and vitamins. It is useful for treating various diseases. It keeps our mind and body healthy. It is found to possess various pharmacological properties such as anti stress, antioxidants, immune stimulants, lipid lowering and

laxative.it is highly beneficial in preserving the vitality of the brain, strengthening the muscles and prolonging life. It is useful for anemia as they contain copper, iron and vitamin [11].

**Bioactive molecules**

In the past decades, Almond byproducts are its seed extract, its skin shell and hull have identified phenolic compounds. The abundant micronutrient in human diet is polyphenols, which played a vital role in the preservation of degenerative diseases such as cancer and cardiovascular disorders. The health effects of poly-phenols depend on the amount consumed and on their bioavailability. In this contribution, various phenolic compounds present in Almond and its by-products, their antioxidant properties and potential use as natural dietary antioxidant [12,13].

**Benefits of almond (*Prunus dulcis*)**

There are numbers of health benefits of Almond.

**Almond (*Prunus dulcis*) and cholesterol**

Almond consumption increases vitamin E level in plasma and red blood cells thus, it lowers the cholesterol level.it is a study published in the journal of the American dietetic association. Vitamin E is powerful antioxidant that prevents artery clogging oxidation of cholesterol. Consumption of Almond (*Prunus Amygdalus*) on daily basis gives you vitamin E which helps to reduce cholesterol [14].

**Almond (*Prunus dulcis*) and cancer risk**

Almond reduces cancer risk. The person who consumed Almond in a higher quantity reduces breast cancer 2 to 3 times. Almond are a good source of anti-oxidants. It can be protected against oxidative stress which contribute to inflammation, aging and cancer. Antioxidants are rich in brown layer of Almond. It is helpful to treat cancer [15].

**Almond (*Prunus dulcis*) and cardiovascular disorders**

Almond have high amount of antioxidants reduces blood pressure and improved blood flow. Regularly consumption of Almond improves the level of lipids and cholesterol in blood. Due to this, cardiovascular disorders reduces [16].

**Almond (*Prunus dulcis*) and blood sugar**

Almond control the blood sugar level. It is high in healthy fats, fiber and protein. Almond contain high amount of magnesium which helps to control blood sugar. Diabetic patients are deficient of magnesium. It lowers blood sugar level and improves the insulin functions [17].

**Almond (*Prunus dulcis*) and blood pressure**

Almond are rich in magnesium which helps to lower blood pressure. Its deficiency may lead to overweight or high blood pressure. High blood pressure is the major cause of heart attack, strokes and kidney failure [18].

### Almond (*Prunus dulcis*) and weight loss

Almond are effective for weight loss. Eating Almond boost, the metabolism slightly. Almond consumption reduces the weight due to low caloric nut. Women eat Almond to reduce weight [19].

### Almond (*Prunus dulcis*) and hunger

Almond reduces hunger and lowering overall caloric intake. Almond are low in carbohydrates and high in proteins and fibers. Fibers and protein consumption reduces appetite so, it helps you to eat few caloric food. It causes hunger fighting [20].

### Allergy of almond (*Prunus dulcis*)

With the consumption of Almond, risks take place. The symptoms of Almond allergy include: Nausea and vomiting, Stomach pain and cramps, Problems in swallowing, Diarrhea, Itching and shortness of breath. So, if you are allergic to Almond it is important to avoid any food containing Almond. It is used to make frangipane, marzipan and praline. It is used in making cakes, biscuits, chocolates and certain liqueurs [21].

### Bibliography

- Potter D., et al. "Phylogeny and classification of Rosaceae". *Plant systematics and evolution* 266 (2007): 5-43.
- Martínez-Gómez P., et al. "Almond". In *Fruits and Nuts* (2007): 229-242.
- Zohary D and Hopf M." Domestication of plants in the Old World: the origin and spread of cultivated plants in West Asia, Europe and the Nile Valley (No. Ed. 3). Oxford University Press (2000).
- Diamond J. "Guns, Germs, and Steel: The Fates of Human Societies". New York: Norton (1999).
- Shragg T A., et al. "Cyanide poisoning after bitter Almond (*Prunus Amygdalus*) ingestion". *Western Journal of Medicine* 136 (1982): 65.
- Agunbiade SO and Olanlokun J O. "Evaluation of some nutritional characteristics of Indian almond (*Prunus amygdalus*) nut". *Pakistan Journal of Nutrition* 5 (2006): 316-318.
- Ahmad Z. "The uses and properties of Almond (*Prunus Amygdalus*) oil". *Complementary Therapies in Clinical Practice* 16 (2010): 10-12.
- Dhakal S., et al. "Effect of high pressure processing on the immunoreactivity of Almond (*Prunus Amygdalus*) milk". *Food Research International* 62 (2014): 215-222.
- Chaouali N., et al. "Potential toxic levels of cyanide in Almonds (*Prunus amygdalus*), apricot kernels (*Prunus armeniaca*), and Almond syrup". *ISRN toxicology* (2013).
- Sze-Tao., et al. "Functional properties and in vitro digestibility of Almond (*Prunus dulcis* L.) protein isolate". *Food Chemistry* 69 (2000): 153-160.
- Keser S., et al. "Some Bioactive Compounds and Antioxidant Activities of the Bitter Almond Kernel (*Prunus dulcis* var. amara)". *Journal of the Chemical Society of Pakistan* 36 (2014).
- Kernel A. "Some Bioactive Compounds and Antioxidant Activities of the Bitter". *Journal of the Chemical Society of Pakistan* 36 (2014): 922.
- Pinelo M., et al. "Extraction of antioxidant phenolics from Almond hulls (*Prunus amygdalus*) and pine sawdust (*Pinus pinaster*)". *Food Chemistry* 85 (2004): 267-273.
- Berryman C E., et al. "Effects of daily Almond consumption on cardiometabolic risk and abdominal adiposity in healthy adults with elevated LDL-cholesterol: a randomized controlled trial". *Journal of the American Heart Association* 4 (2015).
- Saleem M., et al. "Amygdalin from Apricot Kernels Induces Apoptosis and Causes Cell Cycle Arrest in Cancer Cells: An Updated Review". *Anti-Cancer Agents in Medicinal Chemistry (Formerly Current Medicinal Chemistry-Anti-Cancer Agents)* 18 (2008): 1650-1655.
- Wien M., et al. "Almond consumption and cardiovascular risk factors in adults with prediabetes". *Journal of the American College of Nutrition* 29 (2010): 189-197.
- Damavandi R D., et al. "Effects of hazelnuts consumption on fasting blood sugar and lipoproteins in patients with type 2 diabetes". *Journal of research in medical sciences* 18 (2013): 314.
- Jenkins D J A., et al. "Long-term effects of a plant-based dietary portfolio of cholesterol-lowering foods on blood pressure". *European journal of clinical nutrition* 62 (2008): 781.
- Wien M. A., et al. "Almonds vs complex carbohydrates in a weight reduction program". *International Journal of Obesity* 27 (2003): 1365.
- Zaveri S and Drummond S. "The effect of including a conventional snack (cereal bar) and a nonconventional snack (Almonds) on hunger, eating frequency, dietary intake and body weight". *Journal of Human Nutrition and Dietetics* 22 (2009): 461-468.
- Jayasena S H. "Purification and characterization of select glycoproteins of Almond (*Prunus Dulcis* L.)" (2011).

**Volume 3 Issue 11 November 2019**

**© All rights are reserved by Shahid Mahmood., et al.**