



NUTRITIONAL COMPOSITION AND HEALTH BENEFITS OF GROUNDNUTS

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INTRODUCTION:

Groundnut is originated in South America. It is botanically belongs to *Arachishypogaea*, a leguminous family. The term *Arachisis* derived from the Greek word "arachos", meaning a weed and *hypogaea*, meaning underground chamber, i.e. in botanical terms, as weed with fruits produce below the soil surface. It is also known as peanuts or monkey nuts are the edible seeds of a legume plant that grow to maturity in the ground (Pazderka et al., 2010). Groundnut (*ArachishypogaeaL.*) is called 'king' of oilseeds. It is the most important oil seed crop

in the world. Groundnut is also known as the wonder nut and poor men's cashew nut. It contains 48-50% oil, 26-28% protein and 11-27% carbohydrate, minerals and vitamin (Mukhtar, 2009).

India is one of the largest producers of oilseeds in the world and this sector occupies an important position in the agricultural economy. India, China, Nigeria, USA and Indonesia alone contribute 74% of the total world production. India contributes 19% of world production. It occupies an area of 6.41 million ha with a production of 9.824 million tonnes and possesses an average yield of 1.6 tonnes (Mehrotra, 2011).



Nutritional composition of Ground- nut

Groundnut (*Arachishypogaea*) is also called as poor man's almond. Groundnut plays an important role in the diets of rural populations, particularly children, because of its high contents of protein and carbohydrate. It is also rich in calcium, potassium, phosphorus, magnesium and vitamin E. Groundnut protein is increasingly becoming important as food and feed sources, especially in developing countries where protein from animal sources are not within the means of the majority of the populace. The seed has several uses as whole seed or processed to make peanut butter, oil soups, stews and other products. The cake has several uses in feed and infant food formulations. Groundnut

provides considerable amounts of mineral elements to supplement the dietary requirements of humans (Asibu et al., 2008). One ounce of groundnut contains at least 10% of recommended daily intake for vitamin E, folate, niacin, magnesium, copper, phosphorous, and potassium. Groundnut, along with other legumes, is considered a part of the meat and meat alternative group in food pyramid (Whitney and Rolfes, 1996).

According to Gopalan et al. (2011) 100 g of groundnut provides 567 Kcal energy, 25.3 g protein, 40.1 g fat, 26.1 g carbohydrates and 2.5 g iron. Ayoola et al. (2012) reported that the groundnut seeds (raw, sundried and roasted) contain moisture content of 7.40%, 3.40%, 1.07%; ash content of 1.48%, 1.38%, 1.41%; Crude protein of 24.70%, 21.80%, 18.40%. Groundnut seeds are reported to contain 9.5 to 19.0% total carbohydrates as both soluble and insoluble carbohydrate (Crocker and Barton, 1957; Rao et al., 1965; Oke, 1967; Abel Rahman, 1982; Woodroof, 1983). Savage and Keenan (1994) reported that groundnut seed contains 44 to 56% oil and 22 to 30% protein on a dry seed basis and is a rich source of minerals (P, Ca, Mg and K) and Vitamins (E, K and B group).

The groundnut oil is composed of mixed glycerides, and contain a high proportion of unsaturated fatty acids, in particular Oleic (50-56%) and Linoleic (18-30%) (Young, 1996). They compose sufficient levels of mono-unsaturated fatty acids especially oleic acid. It helps to lower LDL or "bad cholesterol" and increases HDL or "good cholesterol" level in the blood. Groundnuts contain important components for human nutrition. Groundnuts high nutritional content is attributed to the presence of biologically active compounds such as, tocopherols, flavonoids, phytosterols, as well as to their relatively high level of protein and their easy oil digestibility (Venkatachalam and Sathe, 2006; Tuberoso et al., 2007).

Health Benefits of Groundnuts

In 2007, Lokko et al. gave peanuts to the 151 men and women into their daily diet for 12 weeks. They were randomly assigned to eat three 0.5-ounce portions of three peanut flavors or just 1.5 ounces of one flavor, and they were eaten as a snack or as part of a meal. Researchers took blood samples every four weeks and other health measurements every two weeks. Results showed a significant decrease in mean diastolic blood pressure in all participants. For those who had high blood pressure, the changes were greatest over the first two weeks, and were sustained throughout the study. While all participants decreased their blood pressure, slightly greater decreases were observed among the salted or unsalted groundnut-eaters compared to the spicy or honey-roasted groundnut-eaters. These results may be due to the arginine found in groundnuts which promotes the production of nitric oxide – a vasodilator that potentially leads to a decrease in blood pressure. USDA data show that groundnuts contain more arginine than any other whole food, and in fact, more than any other nut.

A study by Harvard School of Public Health showed that the risk of type 2 diabetes decreases the more frequently groundnuts and groundnut butter are consumed. Women consumed a 1-ounce serving of groundnuts or one tablespoon of groundnut butter, 1 to 4 times a week, saw about a 10% reduction in risk, and those consuming 1-ounce of groundnuts or one tablespoon, 5 or more times a week, decreased their risk by more than 25% (Jiang, 2002). Pan (2011) suggested that replacing a serving of red meat with a serving of groundnuts daily decreased type 2 diabetes risk by 21%.

Regular consumption of groundnut has been associated with a reduced risk in developing Type II diabetes (Jiang et al., 2002), cardiovascular disease (Kris-Etherton et al., 1999), colon, prostate and breast cancer (Awad et al., 2000). It also seems to reduce osteoporosis and deficiencies in protein intake (Messina, 1999). Recently, it has been associated with metabolic benefits in the context of counteracting metabolic dysfunction associated with the increasing prevalence of obesity and

metabolic syndrome (Coates and Howe, 2007). Ramesh and Saravanan, 2007 conducted a study on diabetic female rats with body weight of 180 to 200g and they were fed 8% groundnut oil for 42 days, it was observed a significant reduction in glucose level, LDL and increase in HDL.

Pelkman, 2004 conducted a study on weight loss at Penn State fed either a low fat diet or a moderate fat diet that included groundnuts, groundnut butter, and groundnut oil. Both the control and experimental groups lost weight, but only the group eating groundnuts, groundnut butter, and groundnut oil were able to keep their blood triglycerides low during the weight maintenance period. There have been numerous studies in humans and animals that have demonstrated that oils enriched in unsaturated fatty acids lower TC, TG and LDL-C. Diets high in monounsaturated fatty acids have been found to be relatively hypocholesterolemic or hypotriacylglycerolemic, respectively (Bairati, 1992).

In 2003, the US Food and Drug Administration reported that eating 1.5 ounces (43 g) per day of most nuts (including groundnut), as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease (Alper and Mattes, 2003).

In addition to being a source of good protein, groundnut can also be cited as a source of the phytochemical, resveratrol. Resveratrol concentration varies between groundnut parts, processed products, and cultivars. Several studies have shown that resveratrol may help to prevent cardiovascular disease by inhibiting adhesion of monoclonal antibodies and neurophils to vein endothelial cells, thus preventing atherosclerosis. Resveratrol also may help prevent cancer in the promotion and progression phase by inhibiting proliferation of cancer cells and vascularization to cancer cells. With this association with resveratrol, groundnuts are being touted not only as a health food, but also a functional food, capable of preventing cardiovascular problem and cancer (Meredith and Alfred, 2003).

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