



A REVIEW ON THE IMPORTANCE OF BLACK RICE IN OUR DIET

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Article Received on 12/06/2020

Article Revised on 02/07/2020

Article Accepted on 22/07/2020

In the recent past it is believed that the nutrient content of foods has declined due to the depletion of vital minerals of farm soil caused by chemical in agricultural methods. The shift towards hybrid varieties to optimize yields has also diminished the overall nutrition of food. Erratic eating habits and processed foods has taken a toll on human health. The rise in various chronic and metabolic diseases are all indicators of this negative paradigm. Research has confirmed that a diet rich in whole grains, fruits, vegetables and high quality proteins are important for maintaining good health. One such traditional varieties like black rice is cherished for its exceptional nutritional value (Kushwaha, 2016).

Black rice or *Oryzasativa L.* is glutinous, packed with high level of nutrients and cultivated in Asia. The pericarp (outer part) of kernel of this rice colour is black due to a pigment anthocyanin.. Black rice is also known as purple rice. This rice is considered a panacea of many culinary diseases because of its high nutritive value and curative effect. (Kong *et al.*, 2008).

Nutrients content is high in black rice when compared to other varieties. It is high in fibre, anthocyanin, antioxidants, vitamins B and E, iron, thiamine, magnesium, niacin and phosphorous. Black rice, mutates into a regal purple hue when cooked. This is due to the grain's high anthocyanin content. This dark purple color predominantly comes from anthocyanins which are flavonoids that perform as antioxidants in the body (Kushwaha, 2016). Anthocyanins in black rice are the source of antioxidants that have the ability to inhibit the formation or to reduce the concentrations of reactive cell damaging free radicals (Adom and Liu, 2002). Anthocyanins are linked with cardiac health, cancer prevention, relieving inflammation, and with cognitive properties

Black rice contains vitamins and minerals, including iron, vitamin A and B, which are beneficial for health and the prevention of heart disease (Chen *et al.*, 2003). A recent report showed that anthocyanin supplementation in humans improves LDL and HDL levels (Qin *et al.*, 2009) and can delay cancer development in rodents models of carcinogenesis (Thomasset *et al.*, 2009). Black rice may improve certain metabolic pathways associated with diets high in fructose (Guo *et al.*, 2007). The anthocyanins in rice act as antioxidants and can inhibit inflammation in body (Tsuda *et al.*, 1996), thus act as anticancer agents (Kamei *et al.*, 1995).

It promotes blood circulation, slows damage and aging of tissues, reduces cholesterol and blood sugar levels (Tedesco *et al.*, 2001;). Defa and Meizu (2006) showed the presence of nutrients in black rice as fiber, protein, essential amino acids, B vitamins, minerals etc. that are typical of this variety and beneficial to human health.

Young and Kim (2007) found that the antioxidant activity of the extract from rice germ is 1.3–1.6 times higher than the regular white rice. This rice germs has the ability to improve mental health and immunity (Shigeko *et al.*, 2007).

Free radicals are unstable and highly reactive molecules. It is normal for bodies to produce these free radicals in small amounts. However many factors like metabolic stress and UV radiation can increase the formation of these free radicals. Free radicals cause oxidative damage within the body which may eventually result in DNA and protein damage and even cell death. Antioxidants are able to neutralise these free radicals, and can help to prevent oxidative damage. Studies show that antioxidant supplementation can exert a preventative effect against the development of serious health disorders. Antioxidant supplementation has been shown to lower markers of inflammation in the body. Additionally, B vitamins, iron and potassium are essential to muscle building (Kushwaha, 2016). 2-(3, 4-dihydroxyphenyl)-4,6-dihydroxybenzofuran-3-carboxylic acid methyl ester and 4-carbomethoxy-6-hydroxy-2-quinolone in black rice display antioxidative activity in a 1,1-diphenyl-2-picrylhydrazyl free-radical scavenging assay (Chung and Woo, 2001).

Black rice is thus considered a nutrient dense food. Beside being a rich source of nutrients, black rice comparatively has lower in sugar than other superfoods

like berries. Black rice (*Oryzasativa L. var. japonica*) has also been used in folk medicine in Asia (Sim *et al.*, 2007).

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