

Nutritional Values of Black Rice

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Introduction

Black rice (*Zizania aquatica*) is the common rice species i.e. *Oryza sativa* formed by the mutation of Kala4 gene. It is black in color, glutinous with the package of higher levels of nutrients. The consumption of Black rice can alleviate the necessity of cereals with high nutritional value. It is mainly cultivated in Southeast Asian countries like China, Thailand and India. China ranks first in production of around 62% followed by Srilanka, India, Indonesia and Philippines in the World. In India, Black rice is mainly grown in North-eastern states like Manipur, Mizoram, Meghalaya, Assam and some parts of Orissa. The common name of Black rice in India is purple rice, forbidden rice, heaven rice, imperial rice and king's rice. Black rice is popularly known as chak-hao Ambi in Manipur which refers to delicious black rice.



Fig. Black Rice

In 21st century, Black rice taken as a Super food as it is highly rich in antioxidants and vitamin E. The term Super food is used to describe the food with maximum nutritional value. Black rice was originated in china and considered as Luck-rice because it was supposed that people who consumed black rice live longer due to presence of essential phyto nutrients. The black rice becomes black in color due to presence of purple color powerful pigment anthocyanin on the outer covering of rice grain. The anthocyanin components in black rice are about 26.3%. Anthocyanins are flavonoid pigment and are major source of antioxidant that offers protection against free radicals causing cancer, ageing and diseases. There are essential 18 amino acids present in black rice mainly lysine and tryptophan. In comparison to white rice, it is a whole grain, super nutritious type of rice with higher levels of protein, fibers, vitamins i.e. B1 & B2, minerals i.e. iron, zinc, calcium, phosphorus and selenium are found in black rice. Besides, it also possesses various healthy properties like anti-diabetic, anti-cancer and anti-ageing, anti-inflammatory etc. Black rice also free from gluten and cholesterol as well as low in sugar, salt and fat content.

Food is a nutritious substance that people eat or drink in order to maintain their growth and well-being. The nutritional value of black rice means providing extra health benefits to consumers by offering gluten and cholesterol free products. However, black rice is more superior in terms of protein i.e. plant based protein and fibers as well as has 6 times more antioxidants which are more important for strengthening of immune system, in comparison to brown rice. One half serving of cooked black rice contains only 160 cal, 1.5g of fat, 34g of carbohydrates, 2g of fibers, 7.5g of protein, but offers higher amount of flavonoid phyto nutrients. According to a study presented at American Chemical Society, one spoonful of black rice bran contains more anthocyanin than a spoonful of fresh blue berries.

Constituents per 100g of Black rice:

Different types of rice	Fibre (g)	Iron (g)	Protein (g)
Brown rice	2.8	2.2	7.9
Polished white rice	0.6	1.2	6.8
Red rice	2.0	5.5	7.0
Black rice	4.9	3.5	8.5

Table: Nutritional comparison of Black Rice



Among different constituents of black rice, anthocyanin is the most important which eliminates the harmful molecules and prevents DNA damage. The health benefits of black rice i.e. anthocyanin supplementation in human improves LDL and HDL levels and can help in slow down the carcinogenesis. Moreover, black rice is becoming popular between rice consumers and dieticians with the multiple biological activities of the presence of phenolic and antioxidants compounds. Because of free of gluten, the digestion of black rice takes place very easily. Besides all these, due to presence of higher fiber content in black rice, it helps in reducing constipation, extra fat as well as also helps in weight loss. Blood pressure can also be maintained with the consumption of black rice due to presence of essential minerals. With the very slow process of glucose absorption, diabetes can also be reduced to a higher level. Furthermore, regular intake of black rice increases eye vision, lowering the risk of asthma, muscular degeneration, developing cataract etc. Black rice bran is one of the processed food helps in reduction of blood sugar concentration. In addition to it, black rice is commonly used as a condiment, dressing or as a decoration of different types of desserts around the World. Black rice extracts are excellent natural food coloring dye used as alternate for artificial food color to different food and beverages.

Conclusion

Black rice is a super nutritious type of rice species i.e. *Oryza sativa* which is black colored, glutinous, nutty flavored, packed with high levels of nutrients. Recently, it referred as a "Super Food" which it truly deserves. Super Foods are types of food which provide a wide range of health benefits along with their inherent calorie and nutritive value. Regular consumption of black rice may completely eliminate the possibility of many long term diseases like carcinogenic, diabetes, cardiovascular etc. though the popularity of black rice is growing in western countries like US but in India, it is still remaining much less popular than white and brown rice because of lacking of awareness. Therefore, awareness should be created among the people about black rice due to its nutritional properties so that maximum people learn about its benefits and demand it. The black rice fetches higher price of 150-200/Kg in the local market due to its nutrition status. Farmers can be profited with better market value and maximized their farm income with its multi-nutritional value and quality and hence, it will encourage the farmer for its cultivation widely.