

A Review On: Nutritional Value and Health Benefits of Black Rice

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ABSTRACT: Rice is the staple food of South Asia, in particular, the Indian sub- mainland. Like India, China, Japan, the Philippines, and other bordering South and South East Asian populations also prefer rice to wheat. Indians used to have the general propensity for white Rice, not only for their habitual preference but also due to some kind of a perception of the cleaner appearance of the polished grain. That's why it isn't surprising that 'Black rice' is fairly under- preferred rather unknown to utmost Indians. Black rice is a type of rice species obtained from *Oryza sativa* L. (Gramineae) and consumed as functional food due to utility to health. Black rice contains advanced position of proteins, vitamins and minerals than common white rice. Black rice contains essential amino acids like lysine, tryptophan; vitamins similar as vitamin B1, vitamin B2, folic acid; and it's a good source of minerals including iron, zinc, calcium, phosphorus and selenium. Black rice is considered as nature's most well balanced "super food" by scientist and experimenter. A Significant increase in black rice consumption may be achieved by stressing and publicizing its health promoting goods.

KEYWORDS: Blackrice, Antioxidant, Diabetes, Cancer, Anthocyanins

I. INTRODUCTION

Rice is the staple food for ultimate of the people in different countries. Black rice is one kind of rice that is getting farther popular recently and is consumed as functional food due to the mileage to health. Black rice is also known as grandiloquent rice, interdicted rice, heaven rice, proud rice, king's rice and prized rice. still, black rice is superior when compared with brown rice because it contains further protein and fiber than brown rice. And also, black rice has an extremely high antioxidant content, which provides a number of fresh health benefits. Pigmented black rice contains about 6 times further antioxidants than brown rice. Rice

(*Oryza sativa* L.) painted kinds, analogous as black rice, have a advanced content of phenolic mixes as compared to other rice kinds. Black rice has the topmost content of total anthocyanins (327.60 mg 100 g- 1) among all of the studied colored grains. Anthocyanins as functional element has part in preventing habitual and degenerative conditions due to their-- cancer, hypoglycemic exertion. Anthocyanins are also considered as important salutary antioxidants. moment black rice is getting popular because of its health benefits. Black rice provides multitudinous health benefits including prevention and treatment of conditions and conditions analogous as heart complaint, cancer, diabetes, high blood pressure, and extend the quality of life. Several studies suggest that black rice factors play a part in the conservation of health and prevention of conditions.

Aims and objective:

- To specify the nutrient profile of black rice (*Oryza sativa* L).
- To present an overview on health benefits of black rice.
- To introduced black rice as a new age super food.
- To create awareness and promote the consumption of black rice among consumer.

II. DISCUSSION

History Of Black Rice:

It has a rich cultural history, called "forbidden" or "Emperor's" rice; it was reserved for the 'Emperor' in ancient China and considered as a tribute food. In the time since it remained popular in certain regions of China and recently has become prized worldwide for its high levels of antioxidants. Despite its long history, the actual origin of black rice is still obscure. Black rice cultivars are found in several locations scattered throughout Asia (Oikawa,2015).

Now, black rice is consumed and grown in many countries. In India, black rice is grown in Manipur on small scale by traditional farmers. China is the richest country in the black rice resources (62%) followed by Sri Lanka (8.6%), Indonesia (7.2%), India (5.1%), Bangladesh (4.1%) and few in Malaysia (Chaudhary,2003). So far, they have developed 200 varieties including 52 yielding varieties (Biswas,2018).

Nutrient Profile Of Black Rice:

Black rice is rich in source of amino acids, fatty acids, antioxidants, flavonoids, anthocyanins, and other phenolic compounds. There are 18 amino acids with a mix of essential and non-essential types, iron, zinc, copper, carotene, and several important vitamins in black rice. Amino acids are crucial to many of the human body’s functions, from helping repair skin and tissues to improving energy levels and digestion.

Fig 1: Black rice nutrition facts and its varieties



Comparison in terms of antioxidants:
 Black rice competes with the antioxidant potency of fresh fruits. Antioxidant content in black rice is

approximately six times higher than that of brown rice /white rice, mainly anthocyanins.

Antioxidants(g)	Black rice	White rice	Brown rice
Anthocyanins	3.5mg	nil	nil
Flavanols	0.5mg	21ug	24ug
Y-oryzanol's*	0.8mg	8.2ug	12.3ug
Carotenoids	6.5ug	-	-
Tocopherols*	21.5ug	-	1.7ug
Tocotrienols	0.06mg	nil	nil

Health benefits of black rice:

This various black rice offers a variety of health benefits. nonstop consumption of white rice as staple food grain has redounded in malnutrition, anemia and exacerbated diabetes(Jena and Mishra, 2019). In similar case, black rice becomes an

volition as it's consumed as functional food due to its health benefits. Black rice has drawn attention of the scientific community and gained significance in recent times due to high nutritional value, restorative effect, anti-carcinogenic and anti-oxidant parcels. Anthocyanins are colors set up in a variety

of blue and grandiloquent foods, and they help to cover your cells against damage. These colors are also known for reducing inflammation and helping reduce the threat of cardiovascular conditions. Daily consumption of black rice can give you a worthwhile boost on your heart health and overall fitness.

- Anthocyanins similar as cyanidin-3-O-glucoside and peonidin-3-O-glucoside are the major ingredients of black rice which serve as antioxidants.
- Black rice is good for people suffering from diabetes and alzheimer's complaint.
- Vitamin E, an important antioxidant present in black rice is salutary for maintain eye and skin health, skin firmness, restore pliantness and promote hair growth.
- It improves body's resistance to complaint, improves damage to liver cells (hepatitis and cirrhosis), prevents disabled order function, slows down anti-aging.
- It also helps support memory function and collaboration.

RICH SOURCE OF ANTIOXIDANTS:

Antioxidants shows the first line defense against the free radical damage, and are critical for maintaining optimum health and well-being. Oxygen is largely reactive snippet that's able of getting part of potentially damaging motes generally called "free revolutionaries". Reactive oxygen species (ROS) is a term which encompasses all largely reactive, oxygen-containing motes, including free revolutionaries. To cover the cells and organ systems of the body against reactive oxygen species, both endogenous and exogenous factors serve interactively and synergistically to neutralize free revolutionaries. Black rice bran has further anthocyanin antioxidants than blueberries. Antioxidants are suitable to neutralize free revolutionaries, and can help to help oxidative damage. Studies show that antioxidant supplementation can ply a preventative effect against the development of serious conditions like cancer, and may ameliorate overall health.

PREVENT DIABETES MELLITUS:

The number of cases of type 2 diabetes is adding worldwide. This complaint can be characterized by insulin resistance and pancreatic β cell dysfunction, which lead to macro- and micro vascular complications. Published data suggest that anthocyanins may lower blood glucose by

perfecting insulin resistance, guarding β cells, adding stashing of insulin and reducing digestion of sugars in the small intestine. Whole grain black rice has its bran complete, which is a storage of salutary fibre. Since fibre takes a longer time to digest, it makes sure that the sugar in the grain is absorbed over a longer period, maintaining normal blood sugar situations.

FIGHTS AGAINST CANCER PREVENTION:

Cancer is characterized by the proliferation of abnormal cells that fail to respond rightly to normal nonsupervisory mechanisms. Cancer is caused by the commerce of salutary, inheritable, and environmental threat factors. Salutary factors are considered to play a major part in cancer etiology. The antioxidant anthocyanins in black rice helps to cover from cell damage in the body that can beget cancer. In fact, excerpts from black rice have been shown to have an anti-cancer effect and help the growth and spread of excrescences. The forestallment of cancer- cell irruption property of peonidin, peonidin 3-glucoside, cyanidin 3-glucoside, and other major anthocyanins of black rice has been reported. Anthocyanins uprooted from black rice, especially cyanidin and peonidin-3-glucoside, showed an in vitro inhibitory effect on cancer cell proliferation a high protection of endothelial cells from oxidative stress events.

IMPROVES EYE HEALTH:

Along with defensive anthocyanins, black rice contains high quantities of lutein and zeaxanthin, two carotenoids known for their part in supporting eye health. These antioxidants help to cover the cells in your eyes and to reduce the goods of ultraviolet (UV) radiation. Black rice contains important carotenoids which save eye health by guarding against dangerous blue light and helping to reduce the threat of age-related blindness.

SUPPORT NORMAL CHOLESTEROL LEVELS:

Also hiding inside each grain of black rice is something called "anthocyanin phytochemicals." These help to normalize the bad cholesterol levels that may contribute to cardiovascular diseases by regulating your body's ability to metabolise cholesterol.

PROMOTES HEALTHY BRAIN FUNCTION:

High Situations of antioxidant-anthocyanin are also believed to support with healthy brain function and reduced inflammation,

associated with the capability for anthocyanin to suppress the signals of inflammation in areas where it may do.

REDUCES TOXINS IN BODY:

Antioxidants are great at removing poisons, so foods and grains with high situations of antioxidants. similar as black rice give your liver a helping hand in detoxifying your body.

NATURALLY HIGH IN VITAMIN E:

Whereas refined rice loses numerous of their nutrients as they lose their external subcaste on their way to the supermarket shelves, whole grains similar as black rice retain their natural minerals, fibre, antioxidants, and vitamins.

III. CONCLUSION

Black rice is a protean and nutritional grain with multitudinous health benefits. Its unique color, flavor, and texture make it a popular choice in both traditional and ultramodern businesses. Adding black rice to your diet can enhance the nutritive value of your reflections and give a pleasurable culinary experience. Black rice is an excellent volition to white and brown rice, due to its nutrient viscosity, high fiber content, and rich antioxidant content. A promising prospect of black rice can be anticipated shortly as it may earn much further net returns and achieve a stable benefit-cost rate as compared to high-yielding rice kinds.

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