

Nutritional and Health Benefits of Black Wheat

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Introduction

A gluten-free, greyish-black variety, black wheat flour is produced by processing the seeds of the black wheat plant, which the Indian government developed in a lab in Mohali, Punjab NABI (National Agro-Food Biotechnology Institute) Mohali, Punjab (India) developed and produced black wheat in 2015. Purple and blue wheat are the other two variants of black wheat. A patent has been granted to the institute for the production of black wheat. As its name implies, it has a high concentration of the pigment "anthocyanin", the chemical compound that gives fruits and vegetables their blue, black, red, or purple hues. They also serve as natural antioxidants, produced in a field at the time of grain filling, thus providing the wheat with a rich nutritional value.

Black wheat (BW) possesses higher protein content, dietary fiber, calcium, Vitamin K, total flavonoid (TFC) and phenolic content (TPC), and antioxidant activity than the conventional yellow wheat. The TPC of BW is six times higher than yellow wheat with most abundant phenolic acid being ferulic acid.



Around 225 metabolites mainly belonging to flavonoids group differs between black and yellow wheat and are responsible for their colour difference. The expression of structural genes namely TaCHI, TaDFR, TaF3H, TaUGT, TaANS and TaMT was highest in BW than

other pigmented and conventional wheat varieties. Consumption of whole BW led to prevention of cardiovascular disease, inflammation, cancer, diabetes, obesity, aging and large bowel protection. Clinical trials have revealed that enhancement of interleukin (IL)-6 induced due to type 2 and tumor necrosis factor (TNF)- α diabetes mellitus was prevented by the BW diet. Nutrient and bioactive compound rich BW offers a great potential to develop healthy functional food.

Difference between White Wheat and Black Wheat

The quantity of anthocyanins in both varieties of wheat is the main distinction between them. Five parts per million (ppm) or less of anthocyanin can be found in a normal grain of ordinary wheat. In comparison, the black wheat grain has between 100 and 200 ppm. It is healthier in this aspect since consuming more antioxidants helps the body get rid of harmful pollutants and free radicals, improving the health of the body as a whole.

Additionally, black wheat has 35% more zinc than conventional wheat, which enhances the body's immunological and metabolic processes. Additionally, standard wheat types have an iron level of roughly 25%. Black wheat, in contrast, has 60% more iron, which significantly raises the body's levels of hormones and hemoglobin.



Nutritional Value of Black Wheat

Black wheat contains antioxidants, vitamins B, folic acid, selenium, magnesium, manganese, zinc, calcium, iron, copper, potassium, fibre, and amino acids. In addition, black wheat is enriched with 28 times more anthocyanins than conventional wheat varieties. The main nutritional components of this super-food are as follows

1. Anthocyanins

2. Antioxidants
3. Folic acid
4. Dietary fibers
5. High in iron.
6. Gluten-free, thus suitable for those allergic to gluten.
7. Vitamins- Infused with vitamins such as B1, B2, B3, B5, B6, and B9.
8. Minerals include zinc, selenium, manganese, potassium, calcium, iron, magnesium, copper, and phosphorus.
9. Good source of amino acids that aid in tissue formation and body-building.

Health Benefits of Black Wheat

- Improves overall health regular and controlled consumption of anthocyanin, a powerful antioxidant, protects against inflammatory disease and treatment for high blood pressure, colds, urinary tract infections, and heart disease. Additionally, it helps diabetic patients maintain healthy cholesterol and blood sugar levels. According to some research, it may also be able to reduce obesity.
- Enhances immunity Black wheat flour contains more antioxidants than regular wheat, which maintains our antibodies and prevents the formation of free radicals. Furthermore, they protect against DNA damage and lipid peroxidation. Due to its high anti-inflammatory properties, it also multiplies the production of cytokines, which are small proteins that regulate our immune system.
- Manages minor heart problems the unsaturated fatty acids in black wheat are excellent for keeping the heart healthy. Therefore, people who are prone to experiencing heart disorders or other cardiovascular problems can include this super grain in their daily diet. Furthermore, it reduces the risk of strokes and other cardiac conditions.
- Aids with weight loss as a result of its high fiber content, black wheat keeps the stomach full and inhibits undesirable cravings. In addition, the low-fat content of black wheat flour, which exists in its unsaturated form, makes it perfect for people planning to lose weight.
- Relieves constipation Due to its high fibre content, it facilitates optimum digestion and prevents constipation and other gastrointestinal disorders. Furthermore, since it reduces unwanted cravings, issues such as constipation are greatly reduced.

- Supports eye function Anthocyanin deficiency can lead to night blindness due to insufficient nutrition. However, like black currants, black wheat helps minimize the risk of vision loss and free radical damage.
- May reduce cholesterol and triglycerides A rich source of amino acids, black wheat may help lower cholesterol levels by eliminating extra fat from the liver. Additionally, it is beneficial for individuals with high levels of triglycerides in their blood. Its ability to control these two factors further contributes to blood pressure control, thus contributing to the heart's overall health.
- May enhance skin health Black wheat has a six-fold higher total phenolic content (TPC), with ferulic acid accounting for most of its TPC. As an antioxidant, ferulic acid enhances the effects of other antioxidants, making it particularly useful for the skin when it comes to reducing fine lines, spots, and wrinkles



How Can You Add It to Your Everyday Diet

Black wheat flour is a magnificent super food with countless nutritional advantages and benefits. It may be used as a substitute in practically all foods that utilize white flour, maida, besan, or another similar ingredient as their base. As a result, it may be used to make rotis, biscuits, idlis, utthappams, and chillas with ease. Even for dessert, the black wheat halwa has the power to completely alter your palate and perception of flavor.



Black wheat flour is a straightforward grain that offers incredible health advantages. You can significantly enhance your health and ensure that these advantages continue to apply to you in the long run by just making the transition to it today, Some recipe that you can help you to add black wheat in your daily diet for consumption

Black Wheat Dalia:

- One cup (100 g) of black wheat dalia is roasted in ghee.
- Add 2 cups (about 250 ml) of water. to finish cooking.
- After that, taste and add sugar as needed.
- Add cardamom and saffron as a garnish.
- Use any combination of berries and dried fruits for richness.
- Serve warm.

**Black Wheat Dalia Khichdi:**

- One cup (100 g) of black wheat dalia is roasted in ghee.
- Cook with 2 cups (about 250 ml) of water added.
- When ready, season with salt and add the mixed vegetables.
- Serve warm.



Conclusion

It has been noticed that the black wheat is revolutionary research of the researchers. It has lot of health benefits as it is a rich source of beneficial and important nutrients like calcium, vitamins, antioxidants etc. Apart from this it has great potential to generate more income to the farmers. It has a great market value as compare to normal wheat.

References

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