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BLACK RICE (*CHAK-HAO*) AND ITS AMPLE BENEFITS

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C*hak-hao* has an interesting history of its own. In China, it was only grown and reserved for the consumption of the Emperor for both its unique colour and properties thus giving it the moniker of Forbidden Rice, as commoners were not allowed to eat it. *Chak-hao*, an indigenous black rice has been cultivated in the plains and hills of Manipur and Nagaland for centuries. This scented glutinous rice has an intense dark purple-hued outer bran layer which almost looks black, a distinctive fragrance and taste. The two varieties of *Chak-hao* namely *Chak-hao Poireiton* and *Chak-hao Ambui* are used largely for community feasts and ceremonial purposes. 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 (Banerjee *et al.*, 2019; Oikawa *et al.*, 2015).

Socio-Economic Value

Chak-hao is highly associated with socio-cultural value of people of Manipur. It plays a unique role in festival and cultural ceremonies of the state as it uses for namesake on the occasion like birth and death ceremonies of domicile of Manipur (Borah, 2018). During death ceremony, it uses as to make cuisine serve to their ancestor. *Chak-hao* has a deep black color and it usually turns purple after cooked. Its dark purple color is mainly due to the presence of anthocyanin content, which is higher by weight than that of other colored grains. It is very

useful and peasant taste when making porridge, dessert, traditional Chinese black rice cake, bread, and noodles.

Table 1: Nutritional value of black rice per 100 gram

Content	Percentage
Total crude protein	12.15
Total carbohydrate	72.43
Amylose	8.27
Total fat	4.8
Ash	1.57
Curde fibre	0.71

(Source: MOMA, 2023)

Table 2: Minerals component of black rice

Mineral	Quantity
Calcium	24.06 mg
Magnesium	58.46 mg
Manganese	1.03 mg
Copper	4.30 mg
Cobalt	0.43 mg
Iron	23.34 mg
Total anthocyanin	69.2-74.0 mg (cyanidin 3-glucoside)
Total phenolic	500 and 577 mg (Gallic acid equivalent)

(Source: MOMA, 2023)

Health Benefits

Chak-hao possessed with antioxidant quotient which helps in boosting immunity levels and help your body stave off various ailments and infections better. The antioxidants also help discard toxic elements from human body. The Anthocyanins is helps in reducing heart attack prospects. It is also helps in preventing plaque buildup in artery walls and lowering cholesterol levels in human body. It is recommended to serve to pregnant women to provide nourishment to developing baby and to fulfil the nutritional requirement of pregnant women. It helps to reducing the sugar level of diabetic patient.

Use and Processing Opportunities of Black Rice

Most often, *Chakh-hao* is eaten as kheer or rice after cooking. Powder, *suji* (flour), syrup, chocolate, beer, wine, cake, bread, flattened rice, paratha, *ladoo*, and other sweetened foods are a few examples of value-added products that can be made. Manipur is the largest

producer of Black rice (Chak-hao) has huge value addition property various cuisine are cooked at home kitchen like *Kheer*, *Laddu*, *halawa* and other sweetened items. On the other side, processing firms also prepares value added products like biscuits, *bhujia*, cake, *gulab jamun*, *laddu* etc. *Chak-hao* extracts are a plentiful source of anti-oxidative phytochemicals that can be used as nutraceuticals, functional food products and natural colorants rather than toxic synthetics. Black rice, possessed with various nutraceutical compounds like tocotrienols, gamma-aminobutyric acid, oryzanol, rice bran saccharine, lutein, zeaxanthin, butylate hydroanisole and phytosterol, can be economically extracted.

Processed Products of Black Rice



Biscuits

Bhujia

Gulab Jamun



Cake

Laddu

Black rice

Home Made Products of Black Rice



Future Scope

Black rice is a popular food in Manipur due to its high nutritional and economic value. The majority of farmers grow it to fulfill homestead consumption, but those who produce it for sale secure a high profit. Therefore, it can be suggested that if farmers are cultivating black rice as a business motive, the value addition of the same would be helpful to reduce unemployment and boost the economy of the state.

Conclusion

Black rice is an aromatic variety of rice and the state of Manipur covers the largest area of the nation. It is the richest source of vitamins and anthocyanin, due to which its purple colour attracts consumers. Moreover, the pleasant taste of black rice attracts people to consume it at cultural festivals of the state and in the form of various value-added products after processing. Its market price is very high to ensure a high profit for the farmers as well as value chain actors. Therefore, ultimately, it might be helpful to reduce unemployment if it commercializes in the state.

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