

Coloured Wheat- a Steps to Combat Malnutrition

Sandeep Kumar Singh¹ and Deepak Kumar Yadav²

¹M.Sc. (Ag.), Department of Agronomy, BCKV, West Bengal

²Ph.D. Research scholar, Department of Agronomy, I.Ag.Sc. BHU Varanasi (U.P.)

SUMMARY

Coloured wheat is the outcomes of continuous research of 7 years at NABI, Mohali. Its morphological characteristics is similar to the normal wheat plant except grain colour. It is rich in anthocyanins, zinc, iron and dietary fibres. This nutraceutical value of coloured wheat will help in combating the malnutrition.

INTRODUCTION

The Global Nutrition Report 2020 stated that India is among 88 countries that are likely to miss global nutrition targets by 2025. It also identified the country as one with the highest rates of domestic inequalities in malnutrition. Malnutrition contributes to elevated oxidative stress that can lead to several diseases. Wheat and rice are the staple crops consumed by most Indian population. Wheat is a good source of starch, proteins, minerals and dietary fibre and is major contributor towards daily caloric requirements. Further improvement in its nutritional value can address national challenges of malnutrition. Colored wheat has been developed at NABI keeping in view these issues. Common wheat grains across the world are white (amber) in color. The colored wheat, rich in anthocyanin, iron and zinc content. Color (Black and purple) in colored wheat is due to the presence of high anthocyanins (40-140 ppm) that develop naturally in the field at the time of grain filling. Anthocyanin are good antioxidants which helps in removing free radicals from our body. It has been developed by crossing exotic germplasm (EC866732) procured from Japan with a high yielding and disease resistance wheat cultivar PBW621.



Purple
90 ppm



Black
134 ppm



Blue
120 ppm



White
10 ppm

Coloured Wheat in FOCUS

- Coloured wheat has been developed at National Agri-Food Biotechnology institute (NABI), Mohali after the research of 7 years under the leadership of Dr. Monika Garg.
- The name of this wheat has been given by NABI as 'Nabi MG'.
- It is not genetically modified (non-GMO). It is developed by routine plant breeding method.
- It has been protected by filing PATENT and PVP&FRA (protection of plant varieties and farmers' rights authority) applications.
- It has been registered with National Bureau of plant genetic resources (NBPGR) with registration numbers INGR17001, INGR17002, INGR 17003.
- Further, it has been approved for human consumption by Food safety and standards authority of India (FSSAI) vide F.No.04/Std/PA/FSSAI/2018.

Quality Assurance from the Research / Outcomes of the Research

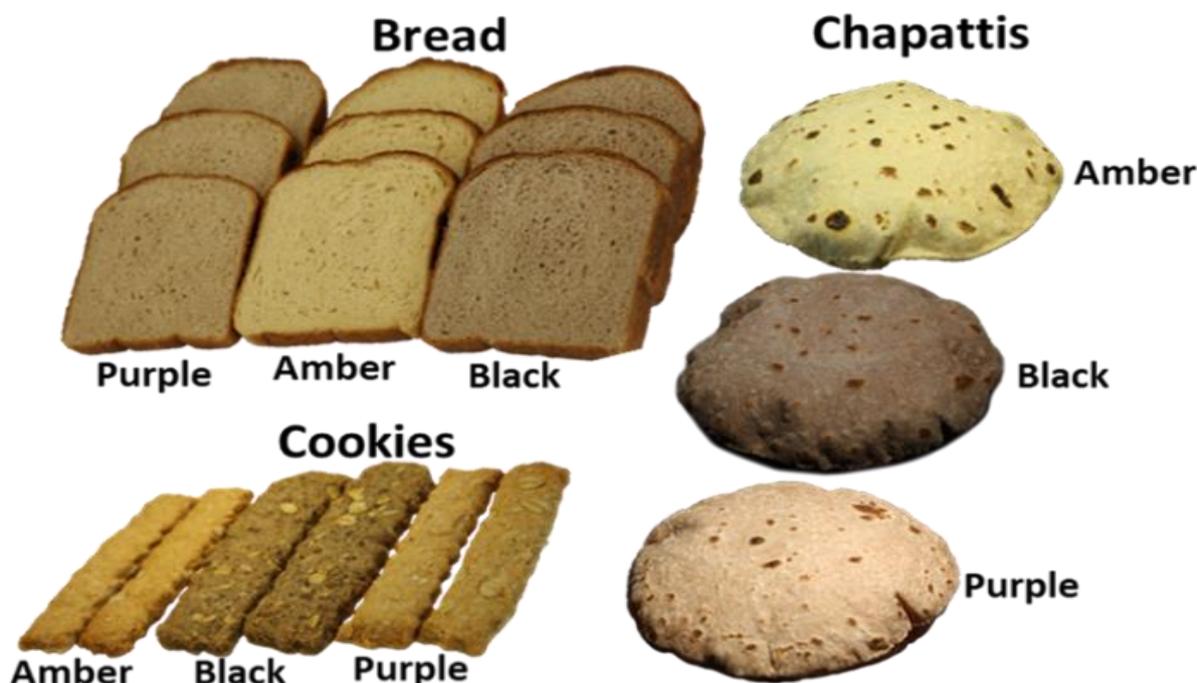
- Laboratory experiments at NABI have confirmed its high anthocyanin content, antioxidant and anti-inflammatory activity.
- Healthy whole coloured wheat is rich in anthocyanins, proteins, dietary fibre and minerals.
- Mouse research at NABI have shown its preventive effects in regulating blood glucose homeostasis, managing insulin resistance, lowering serum cholesterol, preventing fat deposition in models of diet induced obesity

- It has shown preventive effect on unpredictable stress induced antioxidant enzymes in induced stress study in mouse.
- Hypoglycaemic effect of black wheat (developed in China) in diabetic patients has been published in *Journal of Therapeutics and Clinical Risk Management*. 2018; 14: 247–256.

Comparative Compositional Analysis of Colored Wheat (100 gm)

| Parameters | White Wheat | Purple Wheat | Blue Wheat | Black Wheat |
|--------------------|-------------|--------------|------------|-------------|
| Anthocyanins(ppm) | 5 | 40 | 80 | 140 |
| Energy (Kcal) | 322 | 318 | 318 | 318 |
| Carbohydrates(g) | 67.8 | 65.8 | 65.8 | 64.8 |
| Protein (g) | 10 | 11 | 11 | 12 |
| Dietary Fibers (g) | 11 | 12 | 12 | 12 |
| Fat (g) | 1.2 | 1.2 | 1.2 | 1.2 |
| Moisture % | 10 | 10 | 10 | 10 |
| Iron (mg) | 38 | 45 | 45 | 45 |
| Zn (mg) | 28 | 36 | 38 | 35 |

Source: NABI, Mohali, 2020



Health Benefits of Coloured Wheat

Heart Disease:

Increasing heart disease is a result of our lifestyle, in the name of modern life, we are losing our healthy body capital. Human is struggling to keep his body healthy with expensive treatment, which does not guarantee a healthy life despite much expense. Research on heart patients has yielded very meaningful results in the case of black wheat.

Diabetes:

This is a disease that has spread to all the progressive countries of the world and in India also, and the irony is that in spite of many expensive medicines, its permanent treatment is not available yet, even here Research has shown positive results on the person suffering from coloured wheat experiment.

Stress:

In today's time, almost every person is suffering from stress or is facing it somewhere. To get out of stress, he takes new medicines daily, as a result of which, after some time, when the effect of these medicines starts to dissipate, then the suffering person shifts his tendency towards new medicines, meaning the situation gets worse. Here coloured wheat has brought a ray of hope to end this terrible disease like stress. Research has shown that very positive results of its use have been found on a person suffering from stress.

Obesity:

Research has found very encouraging results of coloured wheat in controlling obesity.

Cancer:

Cancer is a disease for which no permanent treatment has been available yet, at this time black wheat has emerged as a better option in the form of food supplements for all those people when medicines are available to control this disease.

CONCLUSION

From the above information it is concluded that consumption of Coloured Wheat in our diet gives us many health benefits and essential nutrients for our body metabolism and provides good and healthy lifestyle.

REFERENCES

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