Development of antioxidants rich colored wheat to combat malnutrition

According to Global Food Security Index, significant Indian population is malnourished-(under and over nutrition), mainly due to non diet diversification and micronutrient deficiencies. Malnutrition contributes to elevated oxidative stress that can lead to several diseases. Wheat and rice are the affordable, staple crops consumed by the Indian population. Improvement in nutritional quality of staple crops can have easy and wider outreach to address national challenges. During our five year research, we have developed colored wheat lines (black, blue, purple) adapted to Indian climatic conditions and with acceptable yield potential. The color in these lines is due to high anthocyanin content. These lines also showed high micronutrients like iron and zinc. We have identified good antioxidant activity of these lines. Our high fat diet induced mouse model studies have indicated preventive effect of these lines for obesity, insulin resistance and hypercholesterol.

Being the staple, cheapest and economically important crop, our work has been highlighted by multiple newspapers and Z-news. The Indian patent has been filed for the process of development of naturally colored specialty biscuits and other bakery products from these white lines. Applications have been filed for, registration of these lines, with ICAR- National Bureau of Plant Genetic Resources, India (NBPGR) and protection of these lines with "Protection of Plant Varieties and Farmers' Rights Authority" (PVPFRA), India. Agreement has been signed with industry in a public-private –partnership mode to develop colored wheat based bakery products like bread and biscuits.

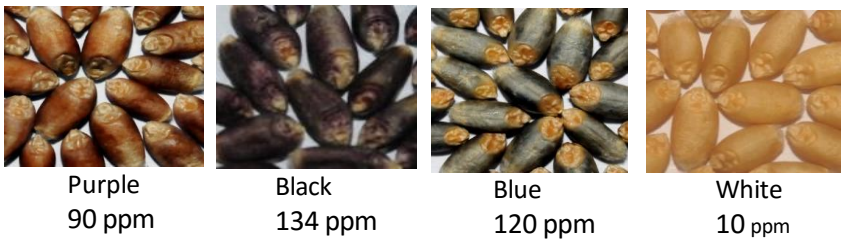

Figure 1: Representative pictures of different coloured wheat with enhanced content of anthocyanins (in ppm)

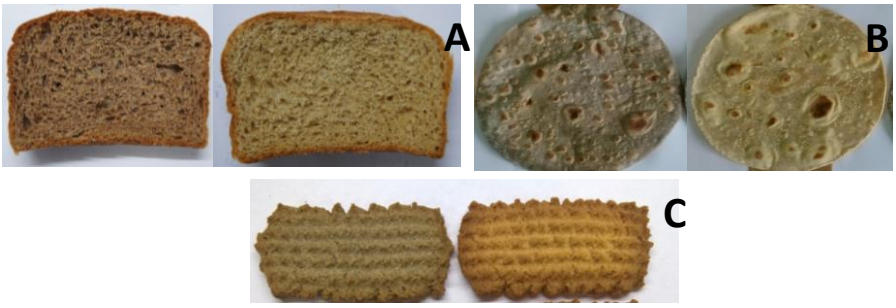

Figure 2: Representative pictures of different coloured wheat products. A. Purple and white wheat bread. B. Blue and white wheat chapatti. C. Black and white wheat biscuit

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