

DETERMINATION OF FUNCTIONAL, NUTRITIONAL AND PHYTOCHEMICAL PROPERTIES OF PIGMENTED MAIZE

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Executive Summary

Consumption of diversified pigmented whole grain maize is encouraged to combat hidden hunger. The present research was conducted to evaluate physico-functional and nutritional properties of pigmented and non-pigmented maize in Bangladesh. Results revealed that white maize had the highest L* value while deep red maize showed the lowest L* value. White maize flour showed the highest change in sedimentation value ($35.43 \pm 0.59\%$). Red maize contained the highest amount of ash ($2.27 \pm 0.059\%$) and mixed maize contained the highest crude fiber ($4.17 \pm 0.049\%$). Deep red and mixed colored maize had the highest carbohydrate (72 to 73%) and the lowest protein content (~6%). Almost all samples had similar Mg and S content. Deep red and mixed maize were promising for Ca. White maize had the highest amount of Zn (19.79 ± 0.1 mg/100 g). Yellow maize contained the highest amount of Fe (4.99 ± 0.37 mg/100 g). In this study, it was observed that the deep red maize was rich in phenolics content. It contained 105.18 ± 8.7 mg FAE/100 g sample free phenolics; 153.11 ± 9.6 mg FAE/100 g sample of bound phenolics and 258.29 ± 5.4 mg FAE/100 g sample of total phenolics. Deep red maize contained the highest flavonoids (52.1 ± 7.5 mg CE/100 g dry weight) as well as anthocyanins (50.14 ± 6.4 C3G equiv./100 g of dry weight sample) among the pigmented and non-pigmented maize varieties. On the other hand, white maize- a non-pigmented maize showed the lowest amount of phenolics and flavonoid content. White maize had the amount of 30.55 ± 1.61 mg FAE /100 g of flour in free phenolics, 46.85 ± 4.4 mg FAE /100 g of flour in bound phenolics, and 77.40 ± 5.7 mg FAE /100g of total phenolics content. Total flavonoids content in white maize was 8.82 mg CE /100 g sample dry basis. Yellow maize performed the lowest for total anthocyanin contents 4.7 ± 1.1 mg C3G/100g of sample dry basis. Whole grain pigmented and non-pigmented hybrid and indigenous maize were comparable for physico-functional and nutritional properties. Pigmented maize varieties are rich source of nutrition as well as health beneficial phytochemicals. As such, use of such colored maize in food preparation could increase immunity to its consumers.

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