

## ***Assessment of The Nutritional Profile, Glycemic Response, and Functional Attributes of Novel Basmati-Type Rice Varieties in Sri Lanka***

M.S. Christopher<sup>1</sup>, G.M. Somaratne<sup>1</sup>, D.C.S. Gunasekara<sup>2</sup>, B.D.R. Prasantha<sup>1\*</sup> and D.S.D.Z. Abeysiriwardena<sup>2</sup>

<sup>1</sup>*Department of Food Science and Technology, Faculty of Agriculture, University of Peradeniya, Sri Lanka*

<sup>2</sup>*CIC Agribusinesses Pvt Ltd., CIC Seed Farm, Pelwehara, Dambulla, Sri Lanka*  
*\*rop\_bd@yahoo.com*

This study aimed to investigate the nutritional composition, glycemic index (GI), and functional properties of three newly developed Basmati-type rice varieties: CIC-Super-Kernel, CIC-Red-Fragrant, and CIC-Ceylon-Purple-Rice. The methodology assessed proximate composition, GI, total phenolic content (TPC), antioxidant activity (AOA), and physical properties such as cooking time, water uptake ratio, gruel solid loss, and kernel dimensions. Results showed no significant differences ( $P < 0.05$ ) in proximate composition among rice varieties. Protein levels were consistent with the typical range (4-14%) observed in Asian rice varieties. CIC-Super-Kernel had significantly lower ( $P < 0.05$ ) saturated fat content, while CIC-Red-Fragrant exhibited significantly higher levels ( $P < 0.05$ ) of mono- and polyunsaturated fats, suggesting a healthier fat profile. Mineral analysis revealed variations, with CIC-Super-Kernel showing significantly higher ( $P < 0.05$ ) potassium, phosphorus, sodium, and zinc levels, and CIC-Red-Fragrant having significantly higher ( $P < 0.05$ ) iron and magnesium contents. All varieties had intermediate amylose content (20-25%). Dietary fibre content ranged from 5.2-6.4%, with minor variations. All exhibited low GI characteristics, with GI values ranging from  $49 \pm 9.4\%$  to  $51 \pm 7.3\%$ . Despite variations in amylose and dietary fibre content, GI values did not significantly differ ( $P < 0.05$ ), suggesting other factors contributing to glycemic effects. CIC-Super-Kernel ( $20.3 \pm 2.9$  mg GAE/g) showed significantly lower ( $P < 0.05$ ) TPC, while CIC-Red-Fragrant ( $91.95 \pm 0.37\%$ ) exhibited significantly higher ( $P < 0.05$ ) AOA. Physical properties assessment revealed differences in cooking time, water uptake ratio, gruel solid loss, and kernel dimensions among the varieties. Evaluation of the relationship between the physico-chemical properties showed that properties such as TPC and AOA ( $r = 0.99$ ;  $P < 0.05$ ), amylose and length-breadth ratio ( $r = 0.99$ ;  $P < 0.05$ ), were strongly correlated, while properties such as amylose and GI ( $r = -0.92$ ;  $P < 0.05$ ), amylose and water uptake ratio ( $r = -0.77$ ;  $P < 0.05$ ), were negatively strongly correlated. In conclusion, these findings affect dietary recommendations and health-conscious consumer choices. Further research is warranted to explore additional factors influencing GI and elucidate the complex relationships among various rice properties and glycemic responses.

**Keywords:** Antioxidant, Basmati, Glycemic Response, Nutrition, Total Phenolic Content

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