

**EFFECT OF VARIETAL DIFFERENCES AND POLISHING LEVELS
ON GLYCEMIC INDEX AND ANTIOXIDANT PROPERTIES OF RICE
(*ORYZA SATIVA L.*)**

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Rice (*Oryza sativa L.*), being one of the primary dietary sources of carbohydrates and the staple food for Sri Lankans, the glycemic index (GI) and antioxidant properties in rice is of particular interest in reducing the risk of Non-Communicable Diseases (NCD). Thus, this study was carried out to investigate the effect of varietal differences and polishing levels on GI and antioxidant properties of rice. The rice varieties used in this study were red basmathi (10% and 100% polished), red fragrance (10% and 100% polished) and suwandel (100% polished). The proximate composition of rice was examined according to AOAC methods. The GI of selected rice varieties were assessed using 13 healthy subjects. The antioxidant activity, total phenolic content (TPC) and total anthocyanin content (TAC) of rice were determined using DPPH (2,2-diphenyl-1-picrylhydrazyl) scavenging method, Follin-Ciocalteu method and pH differential method, respectively.

Results showed a significant difference ($p < 0.05$) in proximate composition among the three varieties, while polishing significantly decreased ($p < 0.05$) the crude fat, crude protein, crude fiber and ash content of red basmathi rice. In this study, GI values differed significantly ($p < 0.05$) among the three rice varieties; highest GI was found in suwandel ($61 \pm 4.6\%$) while red fragrance had the lowest GI ($41 \pm 5.2\%$). The GI of 10% and 100% polished red basmathi were $48 \pm 4.7\%$ and $54 \pm 5.7\%$, respectively. The difference between mean blood glucose concentrations for 10% and 100% polished red basmathi at different time intervals were found not statistically significant ($p > 0.05$), demonstrating that the degree of polishing had no significant effect ($p > 0.05$) on GI of red basmathi rice.

Among the rice varieties, TPC was highest in red basmathi (20.3 ± 0.9 mg gallic acid/g) followed by red fragrance and suwandel. The TAC of red basmathi was the highest (31.3 ± 3.6 mg anthocyanins/100g) while suwandel also showed the lowest (8.4 ± 0.0 mg anthocyanins /100g). Highest antioxidant activity was observed in red basmathi ($15.03 \pm 0.21\%$) and suwandel ($8.58 \pm 0.80\%$) exhibited the lowest activity. Results revealed that both 10% polished red basmathi and red fragrance possess significantly ($p < 0.05$) high antioxidant activity, TPC and TAC compared to 100% polished rice. TPC and TAC of rice varieties were positively correlated with antioxidant activity. Results generated in this study could be used in clinical practice in recommending the appropriate type of rice in order to reduce risk of chronic NCD.

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