Study of Probiotic Activity of Selected Sri Lankan Traditional Rice Varieties when Inoculated by *Lactobacillus plantarum*

***Hettige, K.D.T., Jayarathna, G.E.D.A.M. and Wijewardane, R.M.N.A.**
National Institute of Postharvest Management, Sri Lanka
*Corresponding email:kasun.hettige@gmail.com

This study was conducted to investigate the prebiotic potential of selected traditional rice varieties by inoculating with probiotic bacterium, *Lactobacillus plantarum.* Five traditional rice varieties; *Suwandel, Pachchaperumal, Kaluheenati, Kurulu thuda* and *Madathawalu* as treatments and BG-358 rice variety as control were used in flour form. Dietary fiber and resistant starch content of selected varieties were measured according to AOAC method 2009.01, 2011.25 & 2002.02. Culture media was modified by combining MRS agar with rice flour in 4:1 ratio. *L. plantarum* was inoculated while inhibiting the growth of other bacterial species using ciprofloxacin. Colony Forming Units (CFU) of *L. plantarum* were calculated and it is significantly ($P < 0.05$) higher in all traditional varieties compared to the control variety. CFU varied from $1.87 \pm 0.04 \times 10^7$ to $2.58 \pm 0.05 \times 10^7$ and highest CFU was reported in *Kaluheenati* variety ($2.58 \pm 0.05 \times 10^7$). Prebiotic activity score was calculated by inoculating *L. plantarum* as the probiotic and *Escherichia coli* as the enteric bacteria. Prebiotic activity score was varied from 1.23 ± 0.01 to 1.46 ± 0.02 and *Kaluheenati* expressed significantly higher score than the other traditional varieties. *Kaluheenati* rice variety possesses significantly ($P < 0.05$) higher values of dietary fiber (6.97 ± 0.03 %) and resistant starch (2.53 ± 0.02 %) than the other tested rice varieties. The results revealed that *Kaluheenati* variety has the highest dietary fiber and resistant starch content which is considered to be good for diabetes mellitus type 2. The highest prebiotic activity score of *Kaluheenati* reflects that this variety has appreciable prebiotic potential compared to the other varieties hence enhances the digestive health of the consumers.

Keywords: Dietary fiber, Prebiotics, Probiotics, Resistant starch, Traditional rice