EVALUATION OF PHYSICO-CHEMICAL AND MILLING PROPERTIES OF SELECTED NEWLY DEVELOPED RICE BREEDING LINES (*Oryza sativa L.*) IN SRI LANKA

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This study was conducted at Rice Research and Development Institute (RRDI), *Bathalagoda* to compare physico-chemical characteristics and milling properties of six rice breeding lines (Bg18-3001, Bg18-2997, Bg18-2981, Bg18-3021, Bg15-520, Bg16-2022) with four new improved (Bg360, At373, At311, At309) and two traditional rice varieties (*Suwandel, Sudu Heeneti*). Milling properties [Head Rice Yield% (HRY) and Total Milling Yield% (TMY)] and physico-chemical properties [amylose content% (AC), moisture%, crude protein% (CP), crude fat% (CF), crude fibre% and total antioxidant content (TAC)] were analysed. The experiment was conducted as Completely Randomized Design. ANOVA resulted in significant ($p<0.05$) variation on HRY among the varieties. Bg16-2022 recorded significantly high HRY (75.09 ± 0.20%) followed by other breeding lines except Bg15-520 and Bg18-2997. *Sudu Heeneti* (77.07 ± 0.44%) and Bg 16-2022 (77.01 ± 0.12%) recorded significantly high TMY when compared to the rest. All breeding lines except Bg15-520 and Bg18-2997 recorded significantly high AC ranging from 28.04 ± 0.04 - 28.74 ± 0.82% while At311 (20.41 ± 0.98%), At309 (18.04 ± 0.65%) and At373 (18.69 ± 0.17%) resulted in significantly lower AC compared to the rest. Bg18-2997 (9.25 ± 0.25%) and Bg16-2022 (9.25 ± 0.25%) recorded significantly high moisture content when compared to other breeding lines, At373, At311 and *Suwandel*. Bg16-2022 showed significantly high CP content 8.54 ± 0.05% compared to new improved varieties and other breeding lines. Bg16-2022 recorded significantly high CF content 2.20 ± 0.10% when compared to other breeding lines, new improved varieties and *Sudu Heeneti*. At311 (0.75 ± 0.01%) and Bg18-3001 (0.72 ± 0.01%) recorded significantly high crude fibre content compared to the rest. *Sudu Heeneti* recorded significantly high TAC 19.26 ± 0.03µmolTrolox g^{-1} and Bg15-520, Bg18-3021 and At373 recorded significantly low TAC (0.07 ± 0.01, 0.07 ± 0.01, 0.02 ± 0.01 µmolTroloxg^{-1} respectively). In conclusion, Bg16-2022 recorded significantly high TMY, HRY, CP, and CF contents than other breeding lines.

Keywords: Milling properties, Physico-chemical properties, Rice breeding lines