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Unsaturated fatty acid compositions of selected pigmented and non-pigmented new improved rice varieties (*Oryza sativa* L.) of Sri Lanka

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Rice is the dietary staple for Sri Lankans and it contains monounsaturated fatty acids (MUFAs) and polyunsaturated fatty acids (PUFAs) beneficial to human health.There are thousands of rice varieties (RVs) in the country and widely cultivating and consuming varieties are the new improved rice varieties (NIRVs). Studies on fatty acid (FA) compositions of rice are extremely limited and to date there is no single study reported on FA compositions of NIRVs of Sri Lanka. Thus, this study evaluated the MUFA and PUFA compositions of a range of NIRVs of Sri Lanka. Eight Sri Lankan NIRVs including 03 pigmented (At 362, At 311 & Bw 272-6b) and 05 non-pigmented (Bw 367, At 307, At 308, At 309 & Bg 403) RVs were used in this study. Grain lengths of RVs were measured according to internationally accepted standard methods. Fat was extracted from whole grain rice flour by Soxhlet fat extraction method, followed by derivation to methyl esters and analyzed by Gas chromatography with flame ionization detection (GC-FID). Results showed that studied RVs were extra-long (At 311 & At 309), long (At 362 & At 308), medium (At 307 & Bg 403) and short (Bw 272-6b & Bw 367) grains. Total unsaturated FA, MUFA and PUFA contents of studied RVs were varied from 16.97 ± 0.07 to 24.87 ± 0.07, 9.50 ± 0.10 to 14.55 ± 0.01 and 7.47 ± 0.04 to 10.32 ± 0.07 mg/g of rice respectively and highest in Bw 272-6b. The MUFAs in tested RVs were palmitoleic, oleic and ecosenoic acids whereas oleic acid was the most predominant. Short grain red RV, Bw 272-6b had the highest (14.08 mg/g) content of oleic acid while long grain red RV, At 362 had the lowest (9.15 mg/g). Among the studied RVs, PUFAs present were linoleic, gamma linoleic, homogamma linoleic and docosadienoic acids while linoleic acid was the abundant FA. Linoleic acid was most abundant (9.91 mg/g) in Bw 272-6b while least abundant (7.23 mg/g) in At 362. The findings of this study confirm that MUFAs and PUFAs of studied RVs varied significantly ($p < 0.05$) among the grain sizes while it was insignificant ($p > 0.05$) between pigmented and non-pigmented RVs.

Keywords: Grain size, New improved Sri Lankan rice, Non-pigmented rice, Pigmented rice, Unsaturated fatty acids

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