EFFECT OF COOKING ON ANTIOXIDANT PROPERTIES IN SELECTED RICE (*Oryza sativa* SUB SPECIES: *indica*) VARIETIES POPULAR IN SRI LANKA

A dissertation submitted to the

Faculty of Animal Science and Export Agriculture

Uva Wellassa University

In partial fulfillment of the requirements for the award of

Bachelor of Science in Export Agriculture

by

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2016

ABSTRACT

Rice is the staple food in Sri Lanka. This study was carried out to investigate the variation of antioxidant activity (AOA), and total phenolic compounds content (TPC) in twelve Sri Lankan rice varieties under different cooking treatments (raw, cooked raw rice, parboiled rice, cooked parboiled rice and extraction at gelatinization temperature). Eight improved varieties: Bw 272-6b, Bg 300, Bg 360, Bg 94/1, Bg 352, At 362, At 311 and Bw 367 and four traditional varieties: Sudu Heenati, Kalu Heenati, Madathawalu and Suwandal were collected from Rice Research and Development Institute, Bathalagoda. AOA was determined by using 2,2-diphenyl-1-pcrylhydrazyl (DPPH) method and TPC was analyzed by using Folin-Ciocalteu method. Data were analyzed using the Minitab 17 statistical software. Significant differences were observed in the AOA and TPC among different varieties with different cooking treatments ($p < 0.05$). Positive correlation was found between AOA and TPC. Highest AOA and TPC had in the raw form of rice. Bw 272-6b and Madathawalu recorded the highest antioxidant activity (84.59±2.46 and 84.43±2.93% respectively) and the highest total phenolic content (141.62±5.33 and 129.59±7.11 mg GAE 100 g^{-1} DW respectively). Based on the antioxidant activity in raw form of rice varieties could be clearly categorized into three significantly different groups: group I, group II and III. Antioxidant activity of the groups I, II and III varied between 84.59-76.68%, 31.93-64.34% and less than 29.02%. Parboiling reduced the antioxidant properties in the grains and in a similar way, cooking also reduced the antioxidant properties in raw rice and parboiled rice due to the thermal degradation. Extraction at gelatinization temperature had less antioxidant reduction. Therefore, it could be concluded that the antioxidant properties shows high diversity among different rice varieties under different cooking treatments.

Key words: Antioxidant activity, Cooking treatments, Rice, Total phenolics