



HOW DOES ANTIOXIDANT POTENTIAL VARY WITH PROCESSING? A STUDY WITH SELECTED TRADITIONAL RICE VARIETIES OF SRI LANKA

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Abstract

Rice brans are a potent source of naturally occurring antioxidants. However, total phenol contents (TPC) and antioxidant capacities of differently processed traditional rice varieties have not been studied. Therefore, the objectives of this study were to analyse TPC and antioxidant potentials of differently processed (raw under milled, raw polished (4%) and parboiled under milled) four red and two white coloured less commonly consumed traditional rice varieties namely, *Godaheenati*, *Batapola el*, *Dik wee*, *Dahanala*, *Unakola samba* and *Hangimuththan* respectively. Parboiling was by traditional method. In addition, both cooked and raw rice were assessed to determine the effect of cooking on the antioxidant potentials. Antioxidant activities (ABTS, DPPH and FRAP) and TPC were analysed using standard methods. Data were analysed using a statistical software (SPSS). Mean TPC of both uncooked and cooked, raw polished rice were the lowest (4.9-6.1 mg GAE/g) and the highest TPC was in raw (5.3-6.7mg GAE/g) rice. Mean ABTS activity of raw polished rice (0.8-1.9mg TE/g) was lowest followed by parboiled (1.2-2.3mg TE/g) and raw rice (1.3-2.1mg TE/g). Mean DPPH scavenging and FRAP activities followed the same pattern with uncooked rice having the highest in raw (4.5-6.2mg AE/100g;4.6-14.4mg AE/100g) followed by parboiled (4.4-5.1mg AE/100g;5.0-15.2mg AE/100g) and lowest in raw polished (4.0-4.6mg AE/100g; 5.1-18.5 mg AE/100g) respectively. White varieties showed least activities in all above assays. Phenolic compounds and antioxidant potential increased in the order of raw polished, parboiled and raw rice flour in both cooked and uncooked rice. However, cooking had reduced the antioxidant potentials in all differently processed varieties which may be due to the loss of antioxidant compounds during cooking. Rice grains with red coloured bran produced higher antioxidant activity compared to white varieties due to the presence of more anthocyanins in red rice bran.

Keywords: total phenol contents, antioxidant capacities, traditional rice, parboiling, milling