

Antioxidant properties, degradation kinetics and storage stability of drinks prepared from the cooking water of pigmented rice

ABSTRACT

Pigmented rice, consisting of black rice and red rice, is known to contain antioxidant compounds in its bran that tend to leach out into the water during cooking. As the rice is usually cooked in excess water which is discarded after cooking, the purpose of this study is therefore, to evaluate the rice cooking water as an antioxidant drink in terms of its antioxidant properties, storage stability and anthocyanin degradation kinetics. The results showed that the percentages of antioxidant extractability from pigmented rice into the cooking water were 88.42 and 103.26%, respectively for red rice and black rice, respectively. However, red rice drink possessed significantly ($p < 0.05$) higher antioxidant activity than black rice drink, except for its total monomeric anthocyanin content. The drinks showed good microbiological stability throughout 12 weeks of storage when kept at 4°C, while those stored at 25°C lasted for 4 weeks. There was a significant decrease of antioxidant content, chroma and pH and increase in L value and hue angle, while less significant changes were observed for total soluble solids and viscosity of the drinks during the storage stability study. The degradation of anthocyanins in both drinks kept at different temperatures followed first-order reaction kinetics. According to the findings of this study, black rice and red rice cooking water have the potential of being new antioxidant drinks.

Keyword: Anthocyanin; Antioxidant drink; Antioxidant properties; Black rice; Degradation kinetics; Red rice; Storage stability