

Potential antioxidant properties of pigmented rice from Sabah, Malaysia

Abstract

In this study, the methanolic crude extracts of four Sabah rice varieties namely black, red, brown and white rice were screened for their total phenol acids content, tocopherol content, antioxidant and free radical scavenging properties. The red rice contained the highest quantity of phenolic acids (329.93 ± 19.17 mg/100 g) and tocopherols (200.33 ± 13.61 mg/100 g). To detect antioxidant activity of the pigmented rice extracts, ferric thiocyanate (FTC) assay was used and compared with the thiobarbituric acid (TBA) method. Scavenging activity was measured by 2, 2-diphenyl-1-picrylhydrazyl (DPPH) radicals. Red rice extract showed the highest activity for all the three tests, FTC (0.302), TBA (0.329) and DPPH ($65.54\% \pm 0.57$) due to its high content of phenolic acids and tocopherols. The results indicate that the pigmented rice varieties possess protective effects against the generation of hydroperoxide and free radical scavenging activity. The antioxidant activity of the extracts differed and was dependent on the bran color of the rice. The results showed that the antioxidant activity was in the following order: red rice > black rice > brown rice > white rice. In conclusion, antioxidant activity was strongly correlated to the total phenolic acids and tocopherols content.