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Gamma Oryzanol Content in Local Genotypes of Purple Rice from Thailand

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Abstract

Gamma oryzanol is an unsaponifiable component of rice oil, composed of several kinds of ferulic acids and has an effect similar to vitamin E in human health. Previous research has concentrated on the content in the rice bran, which is not useful in human diet. In this research, objective was to determine the content of gamma oryzanol in the unpolished rice grain. Ten purple rice and two white rice genotypes were experimented. Three replications of RCBD were designed in the field experiment. Grains of purple and white rice genotypes from each replication were milled as unpolished giving purple rice grains and brown rice grains respectively. Crude oil was extracted from this purple and brown rice grains using n-hexane and ethyl acetate. The content of semi purified gamma oryzanol and gamma oryzanol were analysed using a reverse-phase HPLC column of ODS C18. The results show that the contents of crude oil extracted from brown rice grains of the white rice genotypes did not differ significantly from the contents extracted from purple rice grain of the purple rice genotypes. The overall mean was 2.60 g/100g grain. This led to the correlation coefficient of crude oil to semi purified gamma oryzanol and gamma oryzanol to be non significant. The differences among the contents of semi purified gamma oryzanol were significant, as were the differences among the contents of gamma oryzanol. The higher content of gamma oryzanol was found in two purple rice genotypes. These two genotypes exhibited also a higher semi purified gamma oryzanol content. While the purple rice genotypes with a lower gamma oryzanol content exhibited also a lower semi purified gamma oryzanol, one of the white rice genotype (KDML105) also showed a lower gamma oryzanol, exhibited semi purified gamma oryzanol among the higher group. The relationship, however, between these two characters was still significant. Comparison of the three characters between the two rice groups indicated that the purple rice group exhibited a higher mean of gamma oryzanol content than the white rice group mean.

Keywords: Brown rice grain, Gamma oryzanol, Purple rice grain

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