Antioxidant Properties of Wheat Germs with Different Drying Treatments

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ABSTRACT

In this study, wheat germs used as materials were extracted to study the antioxidative components respectively in ethanol, water, and acetone by using three different processes, fresh, freeze dried and hot air dried. In the analysis of reducing power, water extracts had far higher reducing power than ethanol or acetone ones using different dissolvents to extract antioxidative components from the samples of wheat germs. But with the same dissolvent, the extracts of fresh wheat germs had better reducing power, followed by the extracts of freeze dried wheat germs and hot air dried wheat germs. In the analysis of ferrous ion chelating power, the extracts of ethanol had the highest values while chelating power of the ethanol extracts of 2 mg/ml was similar to EDTA with the same chroma. The extracts of fresh wheat germs had the highest values of the ferrous ion chelating power, if extracted in the same dissolvent, followed by the hot air dried extracts and the freeze dried extracts. In the analysis of DPPH scavenging activity, the ethanol and water extracts at a concentration of 20 mg/ml exhibited up to 90 % scavenging activity, if extracted in the same dissolvent, followed by the freeze dried extracts and the hot air dried extracts. In the analysis of Trolox equivalent antioxidant capacity, water extracts had far better Trolox equivalent antioxidant capacity than the ethanol or acetone extracts. The fresh wheat germs extracts and freeze dried wheat germs extracts had the same value of TEAC, if extracted from water at a concentration of 20 mg/ml. In the analysis of superoxide radical scavenging capacity, the water extracts showed higher value of the scavenging capacity, while all the three extracts, extracted with water, of fresh, freeze dried, and hot air dried had the same value of the scavenging power. All the three at a concentration of 2 mg/ml had up to 50% scavenging power. As the quantitative analysis of antioxidative components was concerned, the extracts of fresh , freeze dried and hot air dried had low volumes of the reducing sugar, containing 30 mg per gram. In the analysis of polyphenols, the fresh wheat germs contained the highest volumes. And the fresh wheat germs had the highest volumes of vitamin E. .

Keywords : wheat germs, antioxidative components, freeze dried, hot air dried, reducing power, ferrous ion chelating power, polyphenols, reducing sugar, vitamin E.

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