

Tocopherol composition of deodorization distillates and their antioxidative activity.

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Abstract

During the last stage of plant oil refining, deodorization distillates containing very important biological substances such as tocopherols, sterols, terpenoids or hydrocarbons are formed as a by-products. This study aimed at evaluating the content and antioxidant capacity of tocopherol concentrates from deodorization distillates obtained after the refining of rapeseed, soybean and sunflower oil. The majority of the matrix substances were eliminated from deodorization distillates by freezing with an acetone solution at -70 degrees C. The tocopherol concentrates obtained in this way contained approximately fivefold more tocopherols than the quantity in condensates after deodorization. Antioxidant activity was investigated by observing the peroxide value at 25 degrees C and using the Oxidograph test. The test medium was lard enriched with the tocopherol concentrates of the three plant oils versus single, synthetic alpha-, gamma- and delta-tocopherols (-T), which served for comparison. In these model systems, all investigated tocopherol concentrates exhibited antioxidant capacity. Their antioxidant effect was significantly lower than that of single delta-T and gamma-T, but significantly higher than alpha-T. The results prove that natural tocopherol concentrates obtained from plant oils are valuable food antioxidants and they also increase the biological and nutritional value of food especially when administered to animal fats or food of animal origin. Tocopherol concentrates can fully replace synthetic antioxidants that have been used thus far.