Effects of Drying on the Spinach Lipid and Pigments

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Abstract  Effects of drying and heat pretreatments on the lipid of spinach were studied through thin-layer and gas chromatographies after the separation of total lipid into neutral lipid (NL), glycolipid (GL), and phospholipid (PL) using silicic acid column chromatography. Pigments in dried samples were also analyzed through high performance liquid chromatography. Fresh spinach was treated with blanching for 2 min, blanching for 20 min or steaming for 5 min, and dried under far-infrared (FIR) or vacuum. Heat pretreatment before drying resulted in a decrease in drying yield and moisture content of the dried samples. Contents of chlorophylls and carotenoids tended to be higher in FIR-dried samples and heat pretreated spinach than in the vacuum-dried ones and spinach without heat pretreatment, respectively. Samples blanched for 20 min prior to drying showed the lowest content of these pigments. Among lipid classes GL showed the highest fatty acid composition change by heat pretreatment. The tendency to have less lipid change was observed in steamed samples in terms of heat pretreatment, and in vacuum dried ones in the aspect of drying method. Degrees of heat pretreatment and drying method affecting the spinach lipid were different with the lipid classes. Drying exerted higher effect on GL than the heat pretreatment. On the other hand, a reverse phenomenon was observed in PL.

Keywords: Heat pretreatment, drying, spinach lipid, pigments