

Effect of Drying Condition on the Wheat Germ Stability Using Fluidized-Bed Dryer

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Abstract : Wheat germ is a by-product obtained from wheat milling and it contains highly concentrated nutrients. Due to highly lipase and lipoxygenase activities, wheat germ products can easily turn into rancid flavor and cause a short life. The objective of this study is to control moisture content and retard lipid hydrolysis by fluidized-bed drying. The raw wheat germ of 2 kg was dried with a vertical batch fluidized bed with the following varying conditions, inlet air temperature of 50, 80 and 120°C, inlet air velocity of 3.62 m/s. The experiment was designed to obtain a final product at around 40°C with water activity of 0.3 ± 0.1 . Changes in the moisture content, water activity, enzyme activity of dried wheat germ during storage were measured. Results showed the fluidized-bed drying was found to reduce moisture content, water activity and lipase activity of raw wheat germ. After drying wheat germ, moisture content and water activity were between 5.8% to 7.2% and 0.28 to 0.40 respectively during 12 weeks of storage. The variation range of water activity indicated to retard lipid oxidation. All drying treatments displayed inactivation of lipase, except for drying condition of 50°C which showed relative high enzyme activity. During storage, lipase activity increased slowly during the first 6 weeks of storage and reached a plateau for another 6 weeks. As a result, using a fluidized-bed dryer was found to be effective drying technique in improving storage stability of wheat germ.

Keywords : wheat germ, fluidized-bed dryer, storage, lipase, stability

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