

REDUCTION OF PHYTIC ACID CONTENT OF OAT BRAN WITH DIFFERENT METHODS

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Oat bran is a very important dietary fiber source which reduces the risk of digestive system diseases and colon cancer. Oat bran is functional not only because of containing fiber but also phenolic compounds and antioxidants. These compounds inhibit cardiovascular disease development, lower the risk of many forms of cancer, regulate cholesterol, glucose and insulin metabolism. Despite these positive effects, oat bran is limited in use as human food, mostly due to its high phytic acid content. Because of the fact that phytic acid binds approximately 70% of phosphorus and forms insoluble complexes with elements such as Zn, Fe, Mg and Ca, it inhibits the absorption of these elements. It also lowers the bioavailability of protein by interacting with them. In this study, phytic acid in oat bran was hydrolyzed with two different methods in order to obtain a valuable source of dietary fiber. First method was hydrothermal processing. In this method the phytic acid was hydrolyzed with high temperature and pressure with different pH (3.5, 4.0, 4.5) and different time periods (0.5, 1.0, 1.5 h). In the second method, the material was kept at 30°C with different yeast concentrations, and fermentation periods, and phytic acid was hydrolyzed by yeast phytase during fermentation. As a result of hydrothermal and fermentation process phytic acid decreased by 95.2% and 88.2%, respectively. The greatest decrease was observed at 4 pH and 1.5h samples for hydrothermal process and at 6% yeast concentration and 6h samples for fermentation process.

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