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Functional-Technological Characteristics of Fermented Wheat Germ

Abstract

Wheat grain is composed of endosperm, bran and germ, whose germ accounts for 2-3 percent. During milling of wheat, its germ is separated, while it is a natural source of tocopherols, phytosterols, vitamins, dietary fiber, functional peptides and polyunsaturated fats. Its amino acid composition is approximately same as the model score proposed by FAO/WHO. It can be said that quantity of amino acids in wheat germ are as much as those in egg and milk protein. Wheat germ, by-product of milling wheat, is produced approximately 25000000 tones annually all over the world. There are varied methods for stabilization of germ, such as physical, chemical or biological approaches. In biological stabilization, wheat germ is treated by lactic acid bacteria. Aim of this research is use of fermented defatted wheat germ as sourdough in Baguet bread to exploit its nutritional and technological properties. By this, we can valorize a by-product and exploit it economically and nutritionally. *Lactobacillus Plantarum* was used for fermentation of wheat germ, with 29.15 percent protein. Proteolytic activity in sourdough resulting from wheat germ was 5930 unit/ml, which leading to 6 percent degree of protein hydrolysis of fermented defatted wheat germ. Therefore it is an impressive source of functional peptides, emulsifying activity as well as foaming capacity. More importantly, it showed amazing free radical quenching and antioxidant activity by 84.35 percent DPPH radical-scavengering activity and 25.48 percent Fe+2chelating capacity. Baguet bread prepared by fermented defatted wheat germ had palatable flavor and smell along with desirable texture and shelf life. HPLC analysis of the bread for determining gliadin amount showed reduced gliadin to less than 1/3, so it would be beneficial for ailments who are prone to coeliac.

Biography

A Ph.D. graduate in Agricultural Engineering (Food Chemistry) with ten published journal articles; fluent in English and proficient in technical tools; with more than eighteen years of research experience, seeking a postdoctoral/researcher position in Food chemistry and analysis, Cereal and Legume protein and carbohydrate structure and function, Cereal-based or Legume-based functional foods and nutraceuticals, machine learning or related research areas.

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