

Wheat germ: An overview on nutritional value, antioxidant potential and antibacterial characteristics

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Abstract

Wheat germ is a by-product derived from the wheat milling industry. Defatted wheat germ is the main by-product of the wheat germ oil extraction process. This study aims to development of efficient and low cost processing methods to transform these residues in added value co-product. In this study, Wheat germ was analysed for its proximate composition, fatty acid composition, physical and chemical characteristics. The basic chemical composition analyses revealed high values of dry matter (87.37 g/100 g FW), significant amounts of total protein and fat (13.3 and 8.99 g/100 g FW, respectively) content and low ash content (3.08 g/100 g FW). The quality of the extracted oils was assessed in terms of acid value, iodine value, saponification value, peroxide value, refractive index, and unsaponifiable matter. The fatty acid profile was found to be made up of linoleic followed by oleic and palmitic as the major fatty acids. Antioxidant properties and *in vitro* antibacterial activity of defatted wheat germ (DWG) extract were also determined. DWG, as a source of natural antioxidants and antibacterial, can be used to formulate nutraceuticals with potential applications to reducing the level of oxidative stress. The antioxidant potency of the DWG extracts could be the basis for its health promoting potential. The results show that these by-products can be used as a source of bioactive compounds beneficial for health.

Keywords: Antibacterial activity; Antioxidant properties; Defatted wheat germ; Fatty acid; Wheat germ oil.