

Fruiting-body-base flour from an oyster mushroom—a waste source of antioxidative flour for developing potential functional cookies and steamed-bun

ABSTRACT

In a commercial oyster mushroom farm, fruiting body base (FBB) was not harvested compared to the common cap and stem of the fruiting body parts, and thus remained as waste. In the present study, unused FBB was powdered and subjected to proximate analysis as floured FBB (FFBB). FFBB was found to contain 71.2% carbohydrate, 8.93% moisture, 7.18% fibre, 5.72% ash, 5.57% protein, and 1.4% fat, while raw-FBB (RFBB) contained 7.57% carbohydrate, 84.4% moisture, 5.17% fibre, 5.72% ash, 1.54% protein, and 0.85% fat. The high carbohydrate content of FFBB was subjected to hot-water extraction and yielded 7.40 g of FFBB polysaccharide (FFBBP). Total phenolic content (TPC) of FFBBP contained 1.80 mg gallic acid equivalents (GAE)/g, exhibiting the reducing activity of 1.74 mM Fe(II)/g by ferric reducing antioxidant power assay, and reduced the stable 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonate) radical forms at IC₅₀ of 25.08 mg/mL, which was comparable with other parts of oyster mushroom species. Different percentages of FFBB mixtures were utilized in the production of cookies (10% and 20%) and steamed buns (10%, 20% and 30%). Thirty-seven panellists were selected for sensory testing, which showed that 10% of FFBB in a steamed bun was more acceptable than 30% of FFBB, while the overall acceptance of cookies with 10% FBB was insignificant ($p > 0.05$) but 20% FFBB in cookies was significantly different from control ($p < 0.05$). This study indicates that potential value of FFBB as an economical antioxidative flour in the development of functional foods.

Keyword: Oyster mushroom; Fruiting body waste; Antioxidant properties; Functional cookies; Functional steamed buns

