USE OF CITRUS FIBER IN GROUND BEEF MEATBALLS AS A FUNCTIONAL INGREDIENT

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ABSTRACT

The objective of this study was to determine the use of citrus fiber in ground beef meatballs as a functional ingredient. In four-phase study, presence of antioxidants, such as flavonoids in citrus fiber was identified and quantified. Furthermore, the impact of citrus fiber on physical and chemical properties and lipid oxidation of ground beef meatballs were determined, and consumer’ preferences of meatballs made with or without citrus fiber were evaluated. Results of the study showed that citrus fiber used in this study had a trace amount of quercetin and kaempferol, and low concentrations of nobiletin, sinensetin, heptamethoxyflavone and tangeretin. The addition of citrus fiber at 1% level helped with increasing cooking yield and water holding capacity of the meatballs. When citrus fiber added at 1% level did not cause significant (P > 0.05) change in pH of both raw and cooked meatballs. By using Fourier transform infrared spectroscopy, lipid oxidation of meatballs made with (0%, 1%, 3% and 5%) citrus fiber was predicted using peaks at 2924 cm\(^{-1}\), 2853 cm\(^{-1}\) and 1743 cm\(^{-1}\). Results showed that citrus fiber at 3% and 5% levels were causing lipid oxidation in ground beef meatballs. Last, results of the consumer survey showed that addition of citrus fiber at 1% level had been moderately liked with a mean of 6.61 for flavor and 6.56 for overall likeness.