

VALORIZATION of HAZELNUT and SESAME PROTEIN ISOLATES in SUSTAINABLE MEATBALL MANUFACTURE

Harun Sami Çiftçi¹ and İbrahim Gülseren^{2,3}✉

¹ *Istanbul Sabahattin Zaim University, Technology Transfer Office (TTO), 34303, Halkalı – Küçükçekmece, İstanbul, TURKEY*

² *Department of Food Engineering, Faculty of Engineering and Natural Sciences, İstanbul Sabahattin Zaim University (IZU), 34303, Halkalı – Küçükçekmece, İstanbul, TURKEY*

³ *IZU Food and Agricultural Research Center (GTAUM), Halkalı Campus, 34303, Küçükçekmece, İstanbul, TURKEY*

✉ ibrahim.gulseren@izu.edu.tr

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ABSTRACT

The ever-increasing global demand for proteins necessitates the generation of sustainable plant protein products. The aim of the current study is the utilization of cold press cakes for the generation of hazelnut and sesame protein isolates and their valorization in meatball manufacture. Protein isolates were generated from cold press cakes using an alkaline extraction-isoelectric precipitation (AE-IP) method. The functional properties (solubility, emulsion and foam formation capacity, and oil and water holding capacity) of hazelnut and sesame protein isolates were examined. Furthermore, physicochemical and sensory properties (texture, size, color, and sensory attributes) of the meatball samples fortified by these isolates were investigated. Protein fortification altered color of the meatballs and increased the firmness of meatballs at elevated protein contents. However, toughness or meatball size were unaffected by fortification. The differences between treatments were attributed to the molecular size characteristics of proteins and fiber content in the isolates. Sensory data confirmed that the acceptance for meatballs were maximum for samples fortified with 5% protein and sesame protein isolate was more preferable over hazelnut counterparts. Since commercial meatballs contain approx. 20% protein, $\geq 5\%$ plant protein fortification could be a significant development in protein content and sustainability in meatball production.