

Title: New Perspectives on Bakery Products with Functional Properties and Enhanced Nutritional Benefits

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Abstract:

The food industry is increasingly focused on developing functional foods that offer high nutritional value and health benefits [1]. In this context, a portion of whole durum wheat semolina was replaced with *Pleurotus eryngii* powder (PeP) at concentrations of 5% and 10% (w/w) to produce two variants of taralli, TPE5 and TPE10, respectively. *Pleurotus eryngii* is rich in protein, essential minerals, fiber (β -glucans), and antioxidants, which are associated with potential health advantages such as anticancer properties and inflammation modulation [2]. The impact of PeP on the technological, chemical, physical, and sensory properties of taralli has been evaluated. Nutritionally, the inclusion of PeP in the taralli enhanced the total dietary fiber, meeting the “high fiber content” criteria of Regulation 1924/2006, while improving the total phenol content. This increase is mainly due to the presence of polysaccharides in cereals and mushrooms, particularly β -glucans [3]. The higher fiber and polyphenol content in the enriched samples contributed to a significant reduction in the predicted glycemic index. Experimental evaluations using HCT8 human colon carcinoma cells highlight the antioxidant potential of PeP-enriched taralli, showing a significant decrease in intracellular ROS levels. Additionally, TPE5 exerted beneficial effects by reducing inflammation as demonstrated by a significant reduction in phosphorylation of NF κ B at serine 536 and promoting apoptosis. These effects are likely mediated by regulation of intracellular oxidative states. Overall, these results indicate that enrichment with PeP improves the nutritional profile of taralli and offers potential health benefits, reinforcing its role as a valuable functional ingredient.

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3. Singla, A., Gupta, O. P., Sagwal, V., Kumar, A., Patwa, N., Mohan, N., ... & Singh, G. (2024). *Nutrients*, 16(6), 900.

Biography

Dr. Giusy Rita Caponio is a researcher at the University of Bari Aldo Moro, Department of Biosciences, Biotechnology, and Environment. She obtained her PhD in Soil and Food Sciences in 2022 and has since developed a scientific career focused on food biotechnology and functional foods. Her research explores the valorization of food by-products and bioactive molecules, fermentation processes, and the development of nutraceuticals with antioxidant, prebiotic, and anti-inflammatory properties.