

TAL 797 – Seminário

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Spent Coffee Grounds as a Matrix of Interest in the Food Industry

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Spent coffee grounds are generated in large volumes during the coffee extraction process. A significant amount of this material is improperly disposed of, and due to its organic composition, its decomposition can release gases that are potentially harmful to the environment, such as methane and carbon dioxide. Given this scenario, recent studies on the valorization of this byproduct investigate strategies to mitigate these impacts on the ecosystem. In this context, spent coffee grounds stand out as a matrix of nutritional and technological interest due to their rich composition of dietary fiber, proteins, lipids, and bioactive compounds. Several promising strategies for valorizing spent coffee grounds have been investigated recently, highlighting both the incorporation of the grounds into food formulations and the extraction of bioactive compounds with high technological potential. In bakery products, the study by Mudalal et al. (2025) incorporated 0%, 5%, 10%, and 15% coffee grounds into biscuits, resulting in a higher fiber content at the 15% addition, increasing from 8.87% to 13.35%. Complementarily, Orsi (2025) evaluated muffins made at three levels (0%, 20%, and 40%), observing a reduction in A_w , moisture, and firmness, as well as an increase in density, indicating a physical alteration associated with the fibrous matrix of the grounds. In another approach, Bouhzam et al. (2023) evaluated the yields of different extraction methods for chlorogenic acid (CGA) and caffeine from coffee grounds, concluding that ultrasound-assisted aqueous extraction yielded 1.15 mg of CGA/g of dry matter and 0.972 mg of caffeine/g of dry matter. The valorization of used coffee

grounds has the potential to boost innovation in the food industry by utilizing and transforming waste as a source for various technological applications, aligning with the principles of the circular economy and the Sustainable Development Goals (SDGs) 9, 12, and 13.

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