



Università degli Studi di Napoli Federico II

PhD in Biotechnology - 40th cycle

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Valorization of Agri-Food Waste for Nutraceutical and Functional Ingredients Production in a Technology Transfer and Company Creation Perspective

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Agri-food waste represents a significant global challenge, demanding innovative solutions for resource recovery and environmental sustainability. This PhD project addresses this challenge through a comprehensive approach to valorising agri-food byproducts, integrating biotechnology with a technology transfer perspective. The challenge lies in bridging the gap between academic research and industrial application, transforming waste streams into marketable products. Two case studies exemplify this approach. The first focuses on developing a novel process for high-purity sulforaphane extraction from Brassicaceae waste, addressing the current market limitations of this potent nutraceutical [1]. The second tackles the underutilization of brewers' spent grain (BSG) [2], developing functional food ingredients through innovative extraction techniques. Both cases involve biomass characterization, green extraction, and compound analysis. The project also takes into consideration the valorisation of the extraction byproduct as starting material for paper-like material creation. The project directly confronts the challenges of technology transfer [3], aiming to create a model for successful commercialization. This approach aims to contribute to circular economy, mitigating the annual economic loss associated with food waste [6] and minimizing its environmental impact.

References

1. doi: 10.1155/2019/2716870
2. doi: 10.3390/foods12071533
3. 10.33736/ijbs.4300.2021
4. <https://unfccc.int>