

Title

Effective valorization of food wastes and by-products through pulsed electric field: A systematic review

Journal

Journal of Food Process Engineering: Volume 44, Issue 3

Document Type

Review

Authors

Arshad, R.N.,

Abdul-Malek, Z.,

Roobab, U.,

Qureshi, M.I.,

Khan, N.,

(nohman.khan@s.unikl.edu.my)

Ahmad, M.H.,

Liu, Z.-W.,

Aadil, R.M.

Full text link

UniKL IR:

Publisher: <https://onlinelibrary.wiley.com/doi/abs/10.1111/jfpe.13629>

Citation

Arshad, Rai Naveed & Abdul-Malek, Zulkurnain & Qazalbash, Ume & Khan, Nohman & Ahmad, Mohammad & Liu, zhi wei & Aadil, Rana & Qureshi, Muhammad Imran. (2020). Effective valorization of food wastes and by-products through pulsed electric field: A systematic review. Journal of Food Process Engineering. 44. <https://doi.org/10.1111/jfpe.13629>

Abstract

Utilize food waste and by-products generated from food processing is a developing concern to upgrade economic performance and ensure environmental sustainability. The compounds recovered from the food wastes could have the potential to be employed in different food and biotechnological applications. As a substitute to the conventional method such as Soxhlet extraction, liquid–liquid extraction, and mechanical shaking, the development of green extraction techniques (microwave, ultrasound, and pulsed electric field [PEF]) is seen as a significant step in recovering by-products from food wastes. Among these, PEF is reported as a novel technique that can decrease solvent usage, heating steps, and extraction time to recover by-products. The current review covers recent developments in PEF-based industrial food waste through a systematic literature review. Recent literature was critically evaluated to examine the possibility of this emerging technology in providing sustainable and novel uses of agro-foods waste and animal-food waste. Limited literature is available on industrial scale studies of PEF valorization of

food waste and food co-products. Generally, PEF-based processing is consistently reported as a superior technology that provides high efficiency and better-quality products due to the low temperature of food compounds. This technique has several spectacular possible applications in food processing methods that provide the food industry with better efficiency and high-quality products than existing extraction methods. Practical Applications: This review suggests that PEF treatment of food wastes needs urgent models for optimum processing operation at the industrial level, particularly economic viability under practical working conditions. This innovative processing is generally accepted for more selective, quicker, and sustainable bio-active compounds but still not satisfactorily verified for industrial applications. There are ethical and economic needs for the management of bio-waste, and proper legislation appears to be an essential requirement to effectively and fruitfully utilize food waste.