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VALORIZATION OF APPLE PROCESSING RESIDUES

Maria-Alexandra Gruescu[1], Valentina Prună[1], Liana Maria Alda[1,*], Despina Maria Bordean[1]
University of Life Sciences ”King Mihai I” from Timișoara
*Corresponding author: lianaalda@usvt.ro

***Abstract**: The processing of apples (Malus domestica) generates a solid fraction known as apple pomace that contains pectin, phenolic compounds, carbohydrates, amino acids and proteins. The valorization of these residues can be achieved through conventional methods and modern extraction techniques. In conclusion of this literature review, the valorization of apple residues aligns with the principles of the circular economy, sustainable development, and "zero-waste" processing, while simultaneously offering opportunities for the development of functional ingredients and value-added products.*

• Introduction

This review examines the chemical composition, nutritional properties, and potential applications of these materials, with particular emphasis on dietary fiber, pectin, polyphenols, vitamins, and mineral elements. Apple pomace is recognized as a potential source of pectic substances and phenolic compounds. The valorization of these by-products may support their use in functional food ingredients, pectin and fiber recovery, composting, and other material or energy recovery processes.

• Material and method

The aim of this study is a literature review on the valorization of apple processing residues using databases such as USDA and scientific papers.

• Results and discussions

The valorization of these residues can be achieved through conventional methods and modern extraction techniques (ultrasound assisted extraction, supercritical fluid extraction, microwave-assisted extraction, pressurized-liquid extraction, pulsed electric field aided extraction, enzyme assisted extraction and liquid-liquid extraction). Pectin is used as a gel forming agent, surfactant and thickener in processed foods such as bakery, yoghurts, jellies or beverages.

• Conclusions

In conclusion of this literature review, the valorization of apple residues aligns with the principles of the circular economy, sustainable development, and "zero-waste" processing, while simultaneously offering opportunities for the development of functional ingredients and value-added products.