

THE UTILISATION OF JUICE INDUSTRY WASTE FOR THE EXTRACTION OF ASCORBATE OXIDASE

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Effective waste management and its use are a significant challenge in the implementation of zero-waste policies and the promotion of sustainable development. Approximately 44% of all waste comprises food and other green biomass residues, particularly from fruit and vegetable processing industries like juice production. Annually, the world generates about 4-5 million tons of apple pomace, with inefficient use [1]. Considering the circular economy principles, reusing these pomaces for high-value product manufacturing, such as extracting bioactive compounds, becomes of paramount importance. This waste management initiative not only aligns with global zero-waste goals, but also serves as an example of environmentally conscious practices.

The study aims to extract ascorbate oxidase from apple pomace. An enzyme is important in the food industry and serves as an analytical reagent in the advancement of biosensor technologies [2]. For enzyme extraction, various methods were used, i.e., blending, mechanical stirring, and ultrasonic extraction. To determine the activity of ascorbate oxidase, two different substrates, such as L-ascorbic acid and catechol, were tested at different pH values. For further purification of the enzyme, chromatographic methods should be applied.

[1] Golebiewska E., Kalinowska M., Yildiz G. Sustainable use of apple pomace (AP) in different industrial sectors. *Materials*, 2022, 15, 1788.
[2] Wang X., Dong S., Wei H. Recent Advances on Nanozyme-based Electrochemical Biosensors. *Electroanalysis*, 2023, 35, e202100684