THE INFLUENCE OF SOLVENT TYPE AND ENZYME INHIBITOR ON THE ULTRASOUND-ASSISTED EXTRACTION OF POLYPHENOLS FROM VARIOUS APPLE VARIETIES

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Introduction: The apple industry in Belgium produces 12 500 tons of surplus fruit every year, this study looks for the valorisation of this waste stream by extraction of bio active compounds[1] from 9 different apple varieties using ultrasound-assisted extraction (UAE).

Material & Methods: The effect of an enzyme inhibitor (NaF) was studied on UAE-extracts produced in the presence of ethanol and/or water as extraction solvent. Spectrophotometric analysis determined the total phenolic content and antioxidant activity of the obtained extracts. In addition HPLC-PDA analysis determined the phenolic profile of each apple variety.

Results: The total phenolic content of water-based extracts produced in the presence of NaF ranges between 3.32 ± 0.05 and 6.13 ± 0.08 mg GAE/g DW whereas the yields of ethanol-based extracts range between 4.09 ± 0.25 and 6.55 ± 0.01 mg GAE/g DW. The highest amount of polyphenol marker components detected with HPLC-PDA are found in the water-based extracts in the presence of NaF (310 ± 11 mg/100g DW).

Conclusion: The presence of the enzyme inhibitor has a positive effect on the extraction yield of phenolic compounds. Whereas the use of ethanol as extraction solvent does not give an added value in comparison to water-based extracts.

References:

1. *Liaudanskas M., Viskelis P., Kviklys D., Raudonis R. and Janulis V., International Journal of Food Properties, 2015, 18, 945 – 95.*