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WINERY BY-PRODUCTS: ANTHOCYANINS RECOVERY FROM RED GRAPE SKIN BY HIGH HYDROSTATIC PRESSURE EXTRACTION (HHPE)

Topic 5 - Food quality, food safety, sustainability, consumer behaviour and policy

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INTRODUCTION

The major residues from wine-making industry are represented by organic wastes such as grape pomace, containing seeds, skins and stems. Grape skin has been reported as a rich source of phenolic compounds (e.g. anthocyanins). Anthocyanins present a very high thermal sensitivity thus extraction under lower temperatures is recommended. In this case, high hydrostatic pressure extraction (HHPE) has been reported as novel method to improve the extractability of bioactive compounds from plant materials. Advantages of this approach include shorter extraction times, lower temperatures, higher yields, extract purity, and lower energy consumption.

OBJECTIVES

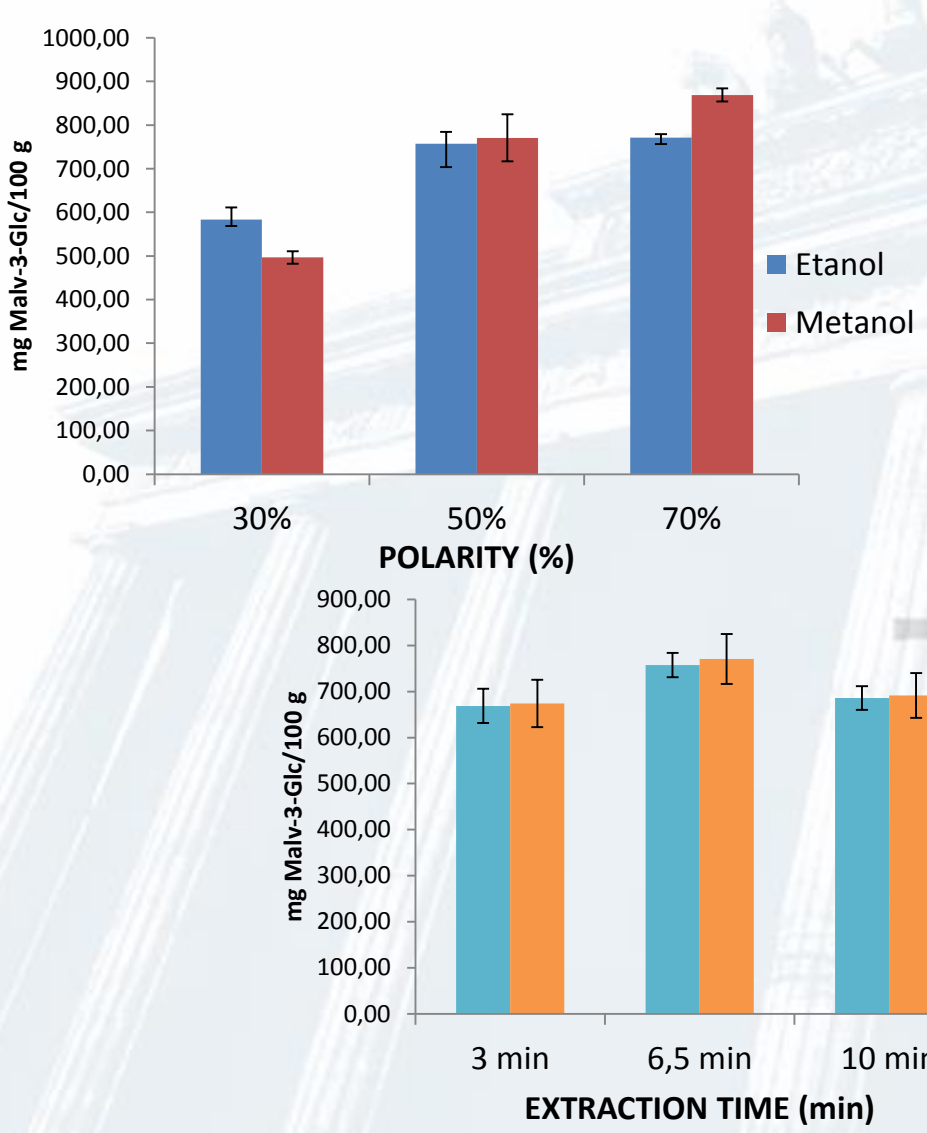
The aim of this study was to investigate the effect of HHPE on the anthocyanin content in red grape skin pomace (cv. Teran). Optimization was carried out to obtain high extraction yields using varying high pressures (300, 400 and 500 MPa), time (3, 6.5 and 10 min), solvent type (ethanol vs. methanol) and solvent polarity (30,50 and 70%,v/v).

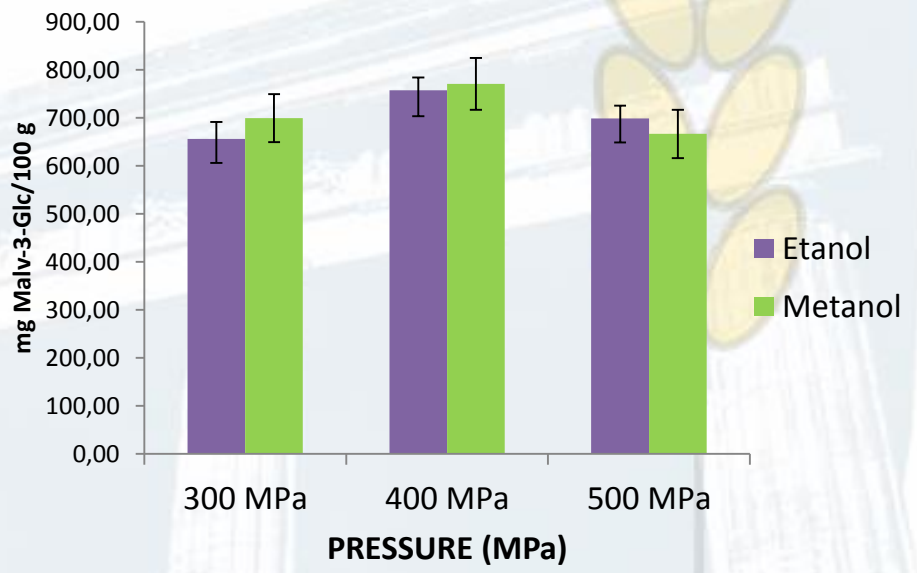
METHODS / DESIGN

Experiments were designed as a full factorial randomized experimental design. Dependent variable was total anthocyanin content (TAC), while independent variables were high pressure, time, solvent type and polarity. Individual anthocyanins were analysed by HPLC UV/Vis and expressed as malvidin-3-glucoside equivalents with an external calibration

RESULTS

Higher solvent polarity and higher pressure resulted in higher recovery of TAC, while the optimal time for extraction of TAC was 3 min.





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CONCLUSIONS

HHPE has been shown to be an efficient method for TAC recovery from red grape skin and could have potential benefits for the use in different industries.

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