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EVALUATION OF OPERATING CONDITIONS FOR EXTRACTION OF PHENOLIC COMPOUNDS FROM SUGAR BEET

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ABSTRACT

This work allowed identifying the most suitable extracting conditions to improve the extraction of phenolic compounds with antioxidant activity from sugar beet. For the experiments, the sugar beet was grounded and samples of 5 g were taken to perform extractions with methanol, for different times (15 and 60 min.) and using different volumes of the extraction solvent (50 and 100 mL). For each of the combinations three successive extraction steps were performed and in each extract were quantified the total phenolic compounds (TPC) and the antioxidant activity (AOA), both by spectrophotometric techniques. The results proved that using three successive extraction steps over the same sample was beneficial and allowed increasing the bioactive properties of the extracts. Furthermore, it was also found that clearly an extraction time of 15 min. was appropriate, thus avoiding the need for longer extraction periods. It was further concluded that using 100 mL of extraction solvent was not so improving as compared to 50 mL, and considering the costs and environmental disadvantages associated with methanol, then the lowest volume should be chosen. The TPC in the fresh beetroot varied from 1.5 to 2.5 mg GAE/g and the AOA from 16.7 to 19.3 $\mu\text{molTE/g}$.

KEY WORDS: Antioxidant Activity, Bioactive Phenols, Extraction Conditions, Phenolic Compounds.

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