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Quantitative determination of some antioxidant compounds from the *Vaccinium myrtills* extracts

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Abstract: The profile of antioxidant compounds of the analyzed extracts was investigated by chromatographic analysis using a Shimadzu Nexera X2 ultra-high performance liquid chromatograph (UHPLC) equipped with a Shimadzu DAD detector and a Nucleosil 100-3-C13 reversed-phase column. Measurements were performed in the wavelength range of 200-600 nm. The plant material subjected to extraction was hawthorn leaves (*Vaccinium myrtills*).

Different solvent extracts were tested and we found that the 70% hydroalcoholic extracts have the highest content in antioxidant compounds, the content of the extracts varying between 8.05 – 3258.73 mg/L.

Introduction

The literature does not offer a very large range of information regarding the extremely complex chemical composition of plant extracts from the species *Vaccinium myrtillus*, although its therapeutic properties are well known. Therefore, a more detailed study on the chemical composition of the plant from the *Ericaceae* family, genus *Vaccinium* rich in antioxidant compounds becomes necessary.

Material and method

The undertaken studies had as raw material the plant species: *Vaccinium myrtillus* - from Fares S. A. Orăştie. Reagents: methanol and phosphoric acid for HPLC – Merck, ascorbic acid – Roth, quercetin ($\geq 99\%$), rutin ($\geq 99.2\%$), kaempferol ($\geq 99\%$), caffeic acid ($\geq 99\%$), vanillic acid ($\geq 99\%$), syringic acid ($\geq 99\%$), p-coumaric acid ($\geq 99\%$), catechin ($\geq 99\%$), rosmarinic acid ($\geq 99\%$), ferulic acid - Roth.

Were obtained 96% hydroalcoholic and 70% ethanol extracts, with a clear appearance and having a specific color.

Method: High Performance Liquid Chromatography

Results and discussions

The results show that the extracts obtained by static extraction using 70% ethanol as solvent have the highest content in the analyzed compounds. It was found that the hydroalcoholic 70% ethanol extract has the highest content of caffeic acid, and the lowest content is ferulic acid in the 96% hydroalcoholic extract. The three flavonoids (kaempferol, quercetin, rutin) were not present in the two types of hydroalcoholic extracts analyzed, instead the other analyzed compounds with an antioxidant character are found in significant quantities.

Conclusions

In the hydroalcoholic extracts analyzed, high-performance liquid chromatography compounds with an antioxidant character were quantitatively determined. As a result of the analysis carried out, it can be stated that the 70% ethanol hydroalcoholic extracts indicate significantly higher amounts of antioxidant compounds compared to the 90% ethanol hydroalcoholic extracts obtained in the same way. Regardless of the used extract, kaempferol, quercetin and rutin were not found in the analyzed samples.

