

COMPLEXATION OF DIETARY FIBERS WITH ELDERFLOWER (*Sambucus nigra*) POLYPHENOLS

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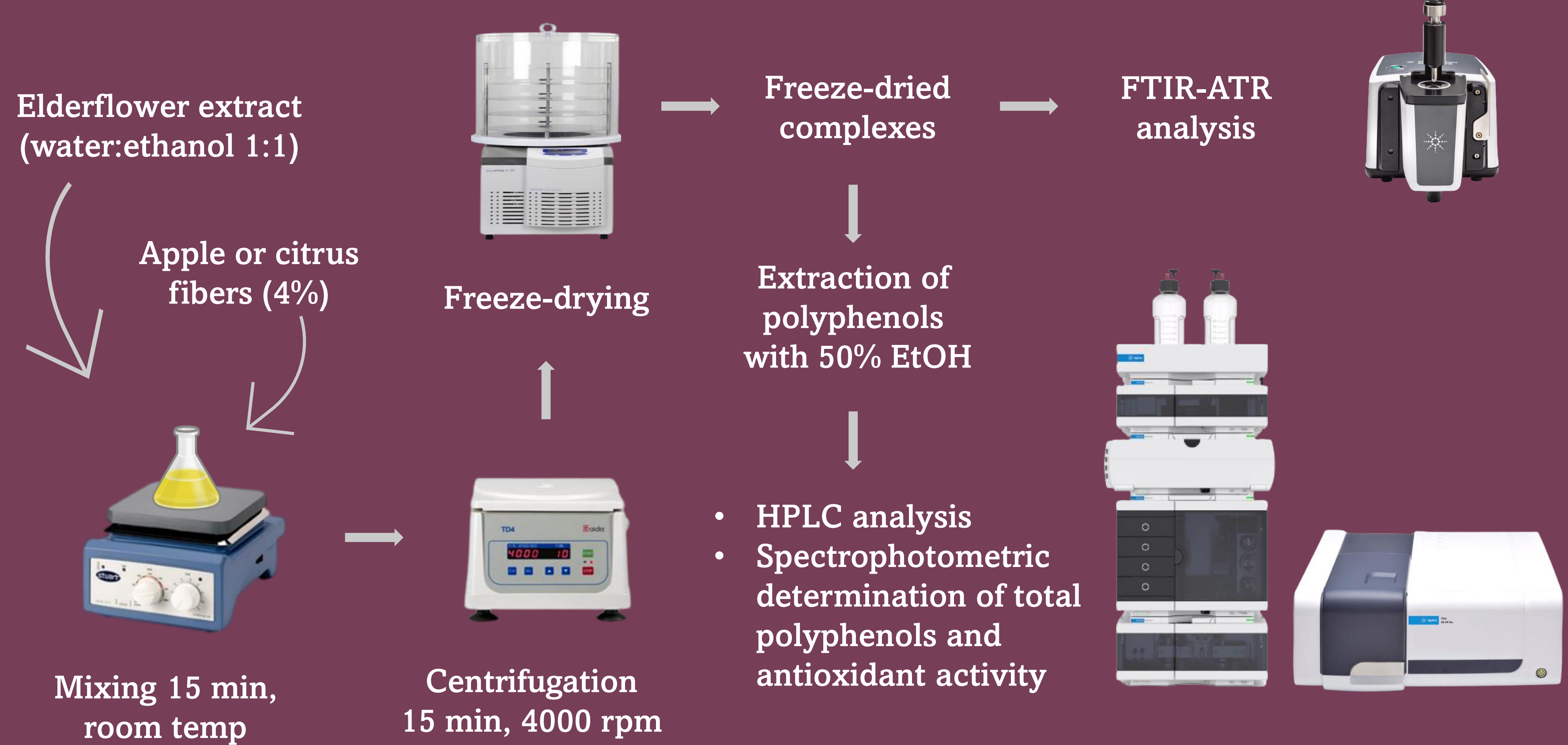
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INTRODUCTION

Wild plants have recently attracted attention due to the rich content of bioactive components and the potential positive effect on human health. Among them, elderflower is recognizable for its intense and attractive flavor but also due to its rich phenolic acids and flavonoid content. Dietary fibers, besides health benefits, have the ability to interact with polyphenols. The aim of the present study was to prepare bioactive complexes based on apple or citrus fibers with elderflower polyphenols.

MATERIALS AND METHODS



RESULTS

Table 1 Total polyphenols content of complexes

Sample	Total polyphenols content (g/kg)
Citrus fiber/elderflower	3.48 ± 0.10 ^b
Apple fiber/elderflower	5.41 ± 0.09 ^a

Means followed by superscript different letters are significantly different at $p \leq 0.05$ (ANOVA, Fisher's LD).

Table 2 HPLC analysis of polyphenols in complexes

Sample	Chlorogenic acid (mg/kg)	Rutin (mg/kg)
Citrus fiber/elderflower	309.36 ± 2.21 ^b	261.13 ± 1.67 ^b
Apple fiber/elderflower	509.28 ± 2.83 ^a	768.13 ± 13.04 ^a

Within the column means followed by superscript different letters are significantly different at $p \leq 0.05$ (ANOVA, Fisher's LD).

Table 3 Antioxidant activity of complexes

Sample	DPPH (μmol/100 g)	ABTS (μmol/100 g)	CUPRAC (μmol/100 g)	FRAP (μmol/100 g)
Citrus fiber/elderflower	3.79 ± 0.40 ^b	20.97 ± 0.08 ^b	96.36 ± 1.51 ^b	1.72 ± 0.09 ^b
Apple fiber/elderflower	21.84 ± 0.31 ^a	39.66 ± 0.53 ^a	185.25 ± 3.50 ^a	2.80 ± 0.13 ^a

Within the column means followed by superscript different letters are significantly different at $p \leq 0.05$ (ANOVA, Fisher's LD).

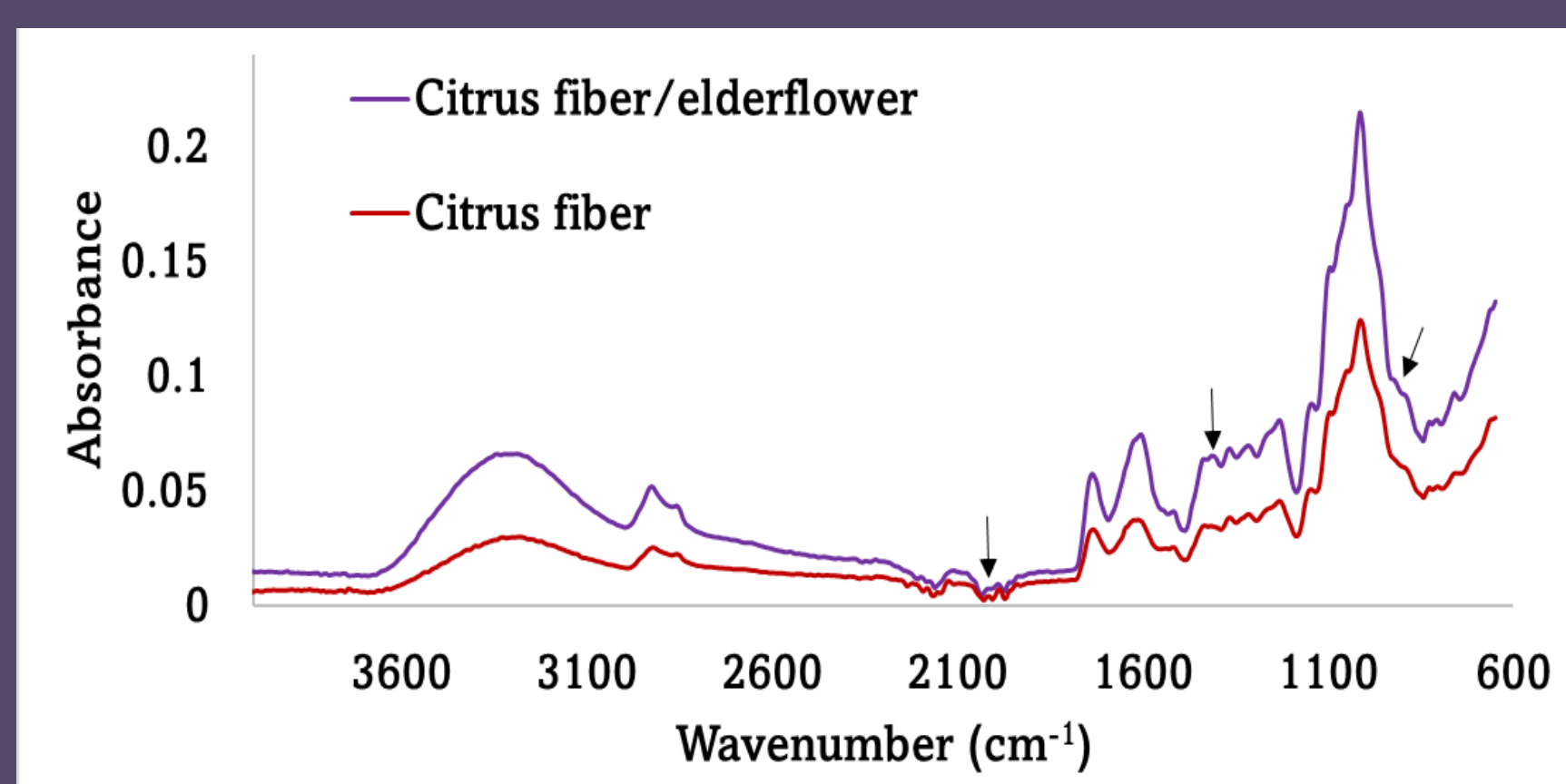


Figure 1 IR spectra of citrus fiber and citrus fiber/elderflower complex

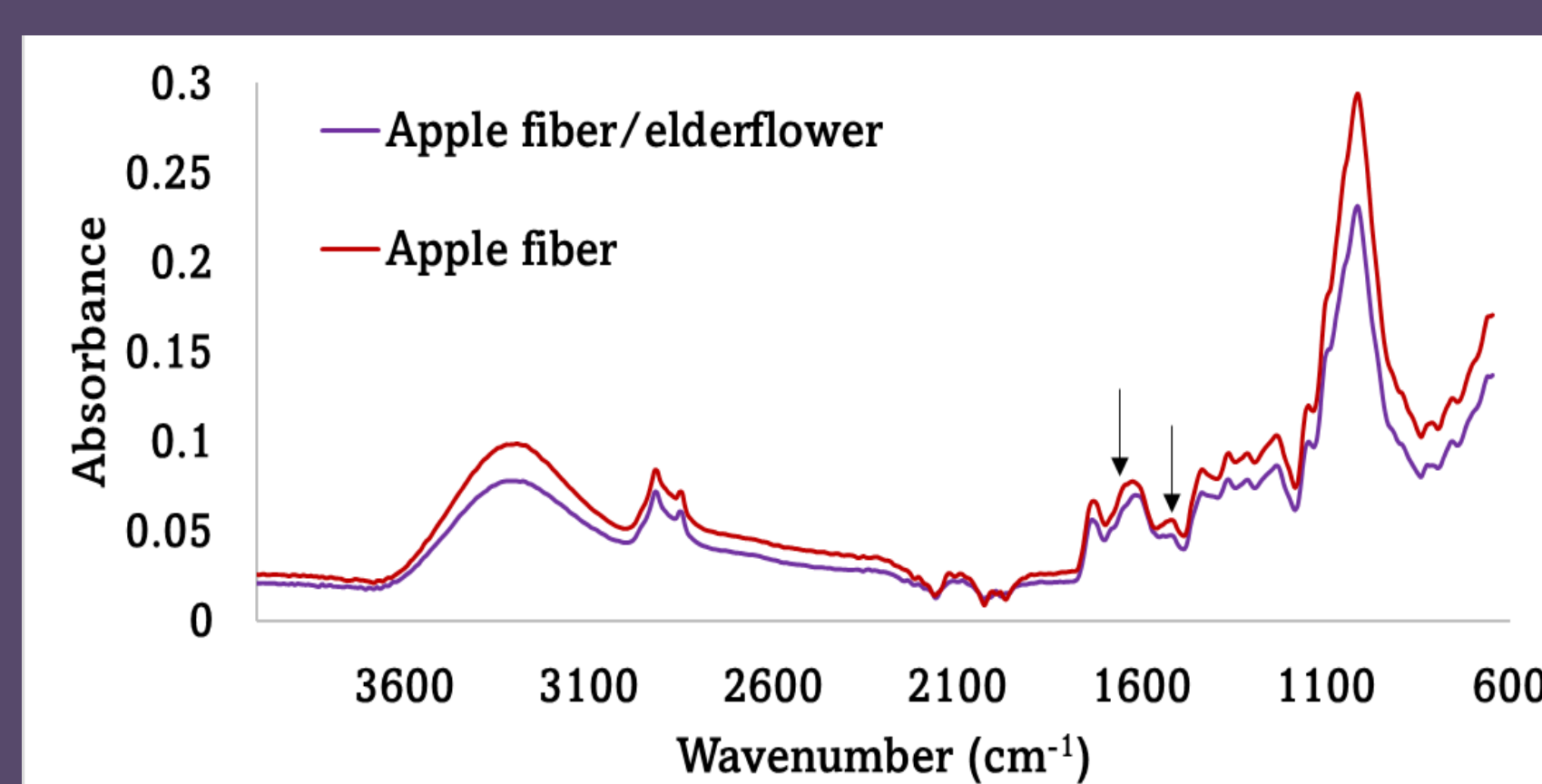


Figure 2 IR spectra of apple fiber and apple fiber/elderflower complex

DISCUSSION AND CONCLUSION

- ✓ Obtained results showed that bioactive complex with apple fibers possessed higher total polyphenols content than complex with citrus fibers (Table 1).
- ✓ Chlorogenic acid and rutin are polyphenols usually present in elderflower extracts and also identified and quantified in these complexes (Table 2).
- ✓ The results of antioxidant activity followed the same trend as for total polyphenol content.
- ✓ Small changes in the IR spectra indicate that polyphenols from elderflower extract were present in obtained complexes (Figure 1 and 2).
- ✓ These bioactive complexes can be applied for the enrichment of different food products with antioxidants.