

Extraction of Genépi (*Artemisia umbelliformis*) using the SpeedExtractor E-916 for the Determination of Total Polyphenol Content

The Genépi plant (*Artemisia umbelliformis*) grows in alpine areas. It is cultivated and used to produce a herb-liquor. Ground Genépi was extracted with the SpeedExtractor E-916 using an alcohol-water mixture and the total polyphenol content was determined photometrically using the Folin-Ciocalteu method. The determined total polyphenol content, expressed as gallic acid, was 38.8 mg/g.

Introduction

The Genépi plant (*Artemisia umbelliformis*) grows in alpine areas between 2000 and 3700 meters above sea level. The plant is cultivated and used to produce a herb liquor, a local specialty in the region of the Valais Alps of Switzerland, Northern Italy and Western France.



Figure 1: Genépi (*Artemisia umbelliformis*)

The sum parameter of total polyphenol content is commonly used in plant analysis to quantify the power of the antioxidant effect. An efficient extraction method to determine the total polyphenol content in the Genépi plant using the SpeedExtractor E-916 is presented below.

Experimental

Instrumentation: SpeedExtractor E-916, ultra centrifugal mill, microplate reader

The dried and ground plants (< 1 mm) were mixed with diatomaceous earth and extracted with the SpeedExtractor E-916 using the parameters shown in Table 1. The sample was extracted in triplicate.

Table 1: Extraction method of SpeedExtractor E-916

Temperature	50 °C
Pressure	100 bar
Solvent	Water 60%, Ethanol 40%
Cells	40 ml
Vials	240 ml
Cycles	3
Heat-up	1 min
Hold	9 min
Discharge	5 min
Flush with solvent	3 min
Flush with gas	5 min

The polyphenolic compounds in the diluted extracts were determined photometrically according to the Folin-Ciocalteu procedure [1], using gallic acid as standard substance.

The absorption is measured at 750 nm, and each extract was analysed in duplicate.

Results

The results (Table 2) correspond to the values determined at the University of Applied Science in Sion/Valais using their established method (37.2 mg/g) [2].

Table 2: Determined total polyphenol content expressed as content of gallic acid (n=2)

	Gallic acid [mg/g]
Sample 1	39.0
Sample 2	39.7
Sample 3	37.7
Mean value	38.8
rsd %	2.60

Conclusion

The extraction of Genépi using SpeedExtractor E-916 for the determination of the total polyphenol content represents a powerful tool for the study of plant materials. The short total extraction time of approx. 1 h 10 min and the small solvent volume used of approx. 60 ml are further benefits of this procedure.

Acknowledgment

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References

- [1] Folin, O.; Ciocalteu, J. (1927) J. Biol. Chem. 73, 627
- [2] Simmonet, X. et al. (2006) Stade phénologique et qualité des hampes florales du genépi blanc. Revue Suisse Vitic. Arboric. Hortic. 38(3) 189-193

SpeedExtractor E-916 operation manual

For more detailed information refer to Application Note 003/2009