SHORT NOTE

Extraction of Edelweiss (*Leontopodium alpinum*) using the Speed-Extractor E-916 for the Determination of Total Polyphenol Content

Edelweiss (Leontopodium alpinum) grows in alpine areas and is also cultivated for its valuable extract. Ground Edelweiss 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 54.8mg/g which corresponds to the values reported in literature [2].

Introduction

Edelweiss (*Leontopodium alpinum*) grows in alpine areas between 1800 and 3000 meters above sea level. It is also cultivated for their valuable extract, rich in polyphenols and antioxidizing agents. The extract is used in cosmetics, facial creams and sun screen.

Figure 1: Edelweiss (*Leontopodium alpinum*)

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

Experimental

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

The dried and ground blossoms (<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 twice.

Results

The results (Table 2) correspond to the values found in literature from 50 up to 60 mg/g [2].

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

	Gallic acid [mg/g]
Sample 1	56.9
Sample 2	54.1
Sample 3	53.4
Mean value	**54.8**
rsd %	3.44

Conclusion

The extraction of Edelweiss using SpeedExtractor E-916 for the determination of the total polyphenol content represents a powerful tool for the study of plant materials. The results are in correspondence with literature. 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.

Acknowledgement

We greatly acknowledge the University of Applied Science of Western Switzerland in Sion/Valais namely Dr. Wilfried Andlauer and Julien Héritier for the analysis and their support for the development of this application note.

References

[1] Folin, O.; Ciocalteu, J. (1927) J. biol. Chem. 73, 627

[2] Rey, Ch.; Slacanin, I. (1999) Approche culturale et phytochimique de l'edelweiss. Revue Suisse Vitic. Arboric, Hortic. 31 (2): 89-96

SpeedExtractor E-916 operation manual

For more detailed information refer to Application Note 002/2009