Wiesława Rosłon*, Ewa Osińska, Paweł Orliński, Anna Geszprych

Warsaw University of Life Sciences – SGGW
Faculty of Horticulture, Biotechnology and Landscape Architecture
Department of Vegetable and Medicinal Plants
Nowoursynowska 159, Warsaw, Poland
* ✉ wieslawa_roslon@sggw.pl

The influence of the extraction conditions on the quality of extracts of psyllium (*Plantago psyllium* L.) herb

INTRODUCTION

Psyllium (*Plantago psyllium* L.) is an important medicinal plant. Its seeds are used as a herbal raw material; sometimes herb is also applied. It contains flavonoid compounds, iridoid glycosides (aucubin), tannins, mucilages, and carotenoids.

In recent years, a very popular form of herbal drug have become plant extracts. Their physiological activity depends on the content of biologically active compounds including polyphenols, highly active ingredients of vegetable origin.

AIM OF WORK

In the presented study the influence of extraction method and conditions on the quality of extracts of psyllium herb was evaluated.

Plantago psyllium L.

MATERIALS AND METHODS

The raw material was collected from the plantation established at the experimental field of the Dept. of Vegetable and Medicinal Plants WULS-SGGW in Warsaw. The herb was cut at the stage of blooming (I decade of July), dried at ambient temperature, and ground. Obtained raw material was extracted at the following conditions:

Methods of extraction:

- extraction under reflux,
- Soxhlet-type extraction in Büchi B-811 extraction system,
- ultrasound-assisted extraction.

Extraction media: water, ethanol 100%, ethanol 70%, and ethanol 40%.

The efficiency of each variant of extraction was evaluated.

The obtained extracts were analysed in respect of the content of polyphenolic acids and flavonoids, according to the spectrophotometric methods described in the Polish Pharmacopoeia (FP VIII, 2008).

RESULTS

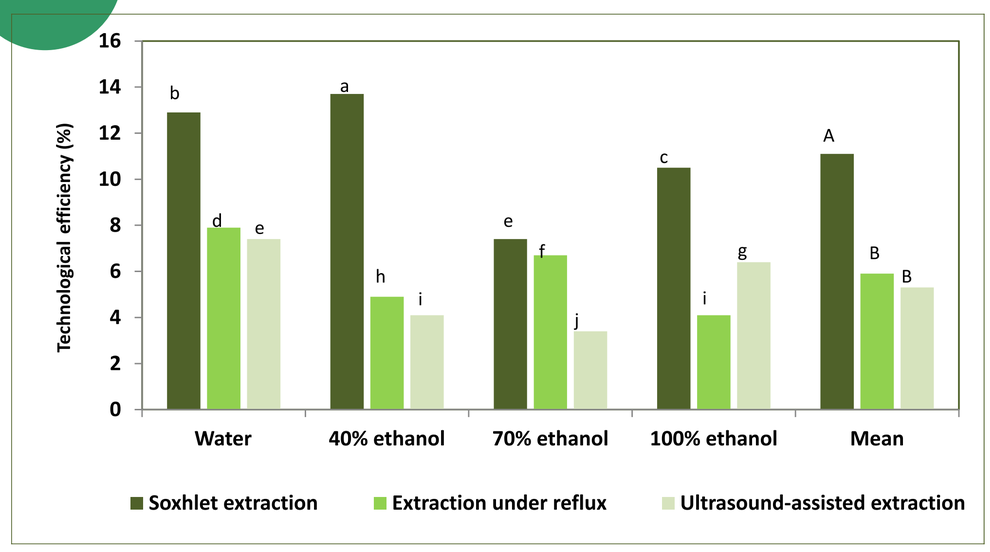

Figure 1. The technological efficiency

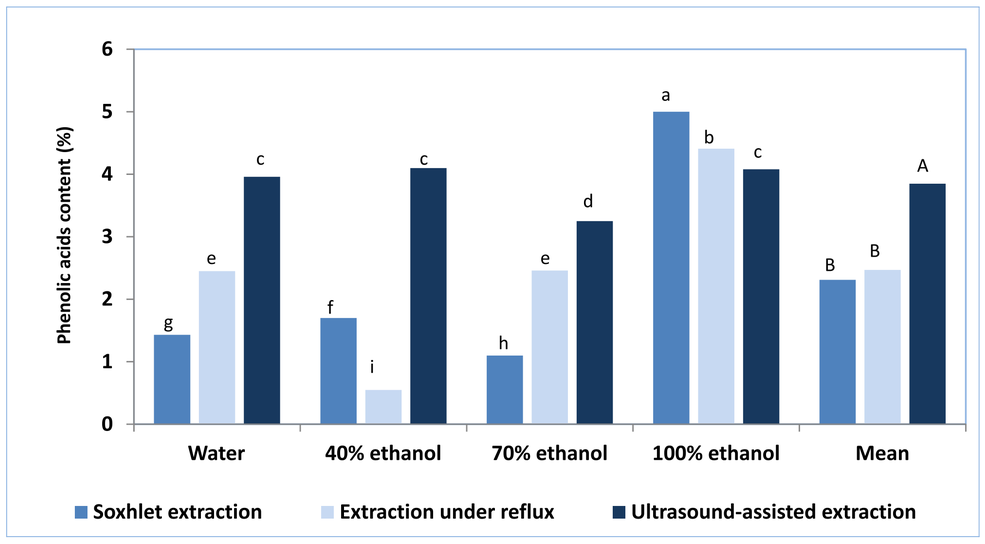

Figure 2. Content of polyphenolic acids

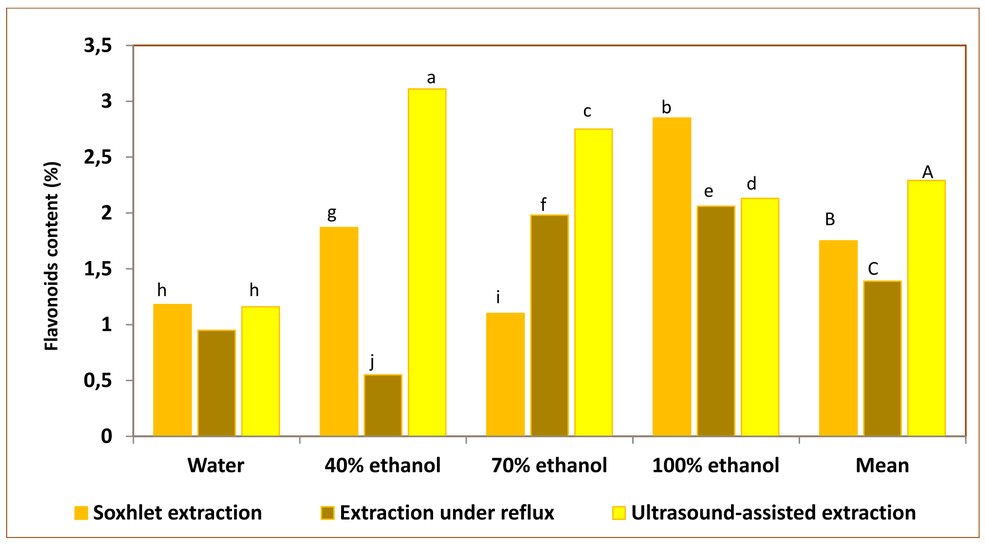

Figure 3. Content of flavonoids

CONCLUSION

- The highest efficiency of extraction was obtained using the Soxhlet apparatus.
- The highest efficiency was obtained when water was used as a solvent (9.4%), and the lowest for 70% ethanol (5.8%).
- Both polyphenolic acids and flavonoids were isolated most efficiently in the ultrasound-assisted type extraction.
- The best solvent for isolating the both groups of compounds was Ethanol 100%.

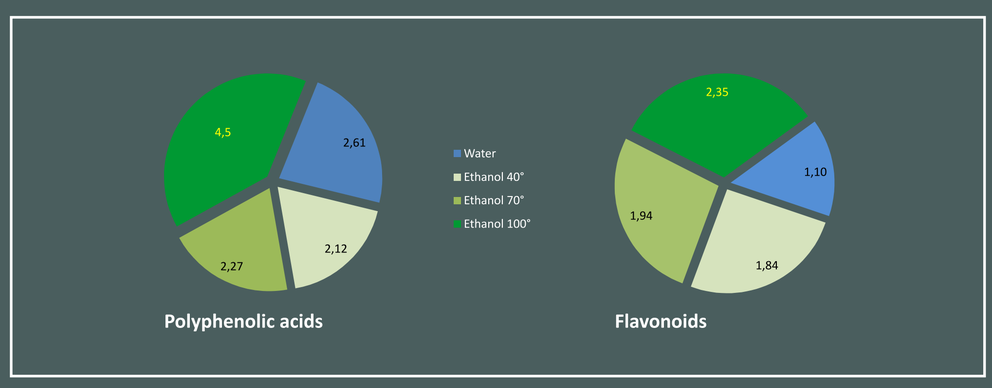

Figure 4. Content of polyphenolic acids and flavonoids depending on the solvent