

# Selection of optimal extraction conditions and phytochemical analysis of *Sorbus aucuparia* L. aqueous extracts

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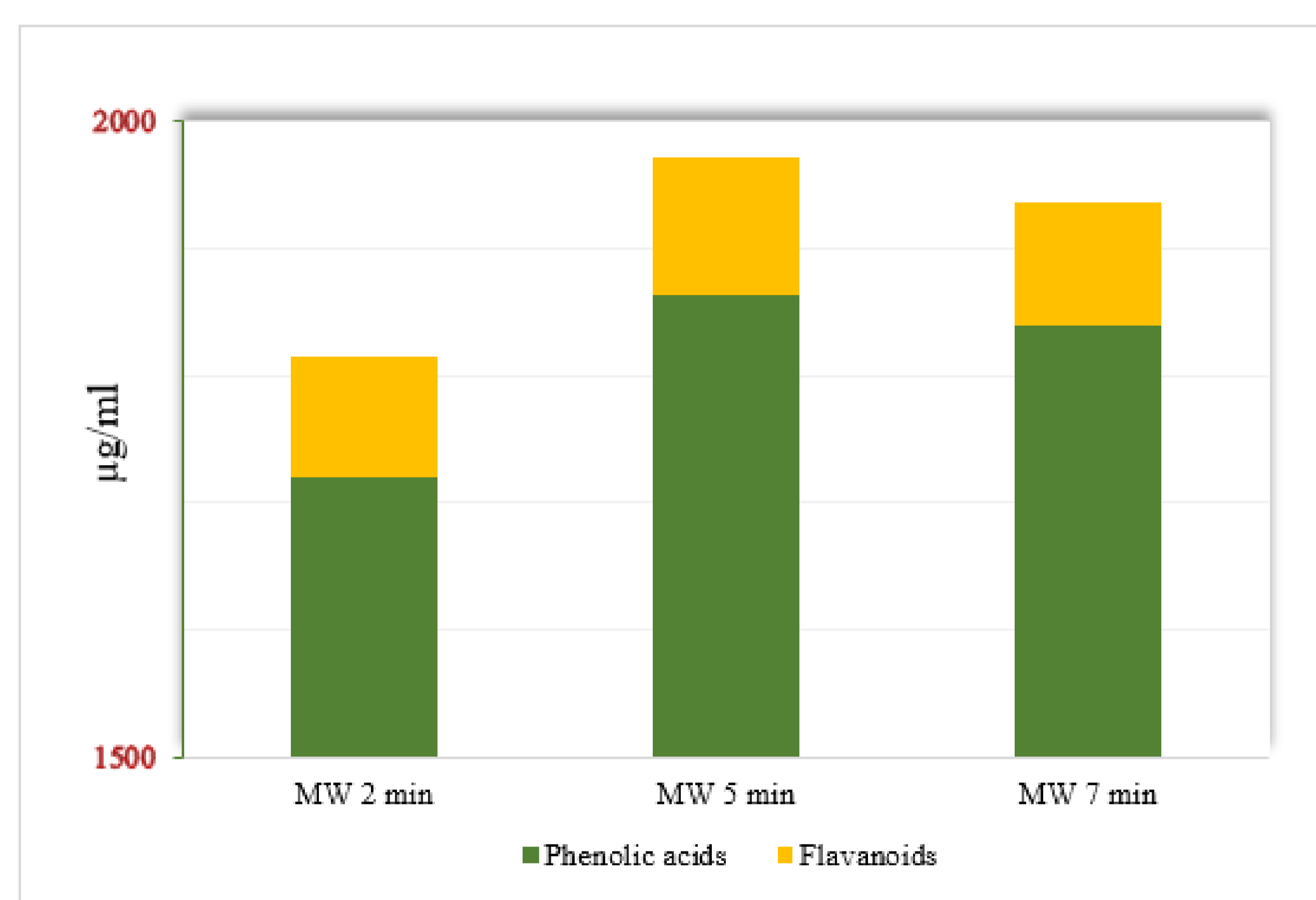
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**Introduction.** Aqueous extracts of *Sorbus aucuparia* L. can contain phenolic compounds with antimicrobial activity against *S. aureus* [1], which can cause skin infections including impetigo, folliculitis, primary abscesses [2], and against *P.aeruginosa*, which is the cause of wound or soft tissue infections [3].

**Materials and methods.** The freeze-dried samples of rowanberries were extracted by using distilled water at a ratio of 1:5. The research compared microwave-mediated extraction, conducted at 800W, under different time regimes: 2 minutes, 5 minutes and 7 minutes, with cooling of the extract and replenishment of evaporated liquid performed every minute. The quantification of the total phenolic acids and flavonoids were estimated using HPLC method.

## Results and discussion.

**Figure 1.** Quantities of the investigated compounds in *S. aucuparia* extracts under different extraction time regimes



The obtained results in Figure 1 demonstrate that the optimal microwave extraction conditions occur with a 5-minute extraction time, as this duration grants the highest total content of phenols: flavonoids and phenolic acids. A similar trend was observed for individual organic compounds, where the 5-minute microwave extraction produced the highest amounts of neochlorogenic acid (944,68 µg/ml), chlorogenic acid (823,62 µg/ml), quercetin (33,99 µg/ml) and rutin (13,29 µg/ml). As the extraction time was extended to 7 minutes, the concentrations of the specified compounds decreased.

**Conclusions.** According to the data obtained from the quantitative analysis, it was observed that in *S. aucuparia* aqueous extracts, the highest quantities of phenols: phenolic acids and flavonoids are obtained by employing a 5-minute microwave-mediated extraction.

## References

1. Vaitūnaitytė M. Fenolinių junginių kokybinės ir kiekybinės sudėties įvairavimo šermukšnių (*S. aucuparia* l.) lapuose ir žieduose tyrimas (Master's thesis, Lithuanian University of Health Sciences (Lithuania)).
2. Del Giudice P. Skin infections caused by *Staphylococcus aureus*. *Acta dermato-venereologica*. 2020;100(9).
3. Nagoba B, Davane M, Gandhi R, Wadher B, Suryawanshi N, Selkar S. Treatment of skin and soft tissue infections caused by *Pseudomonas aeruginosa*—A review of our experiences with citric acid over the past 20 years. *Wound Medicine*. 2017 Dec 1;19:5-9.

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