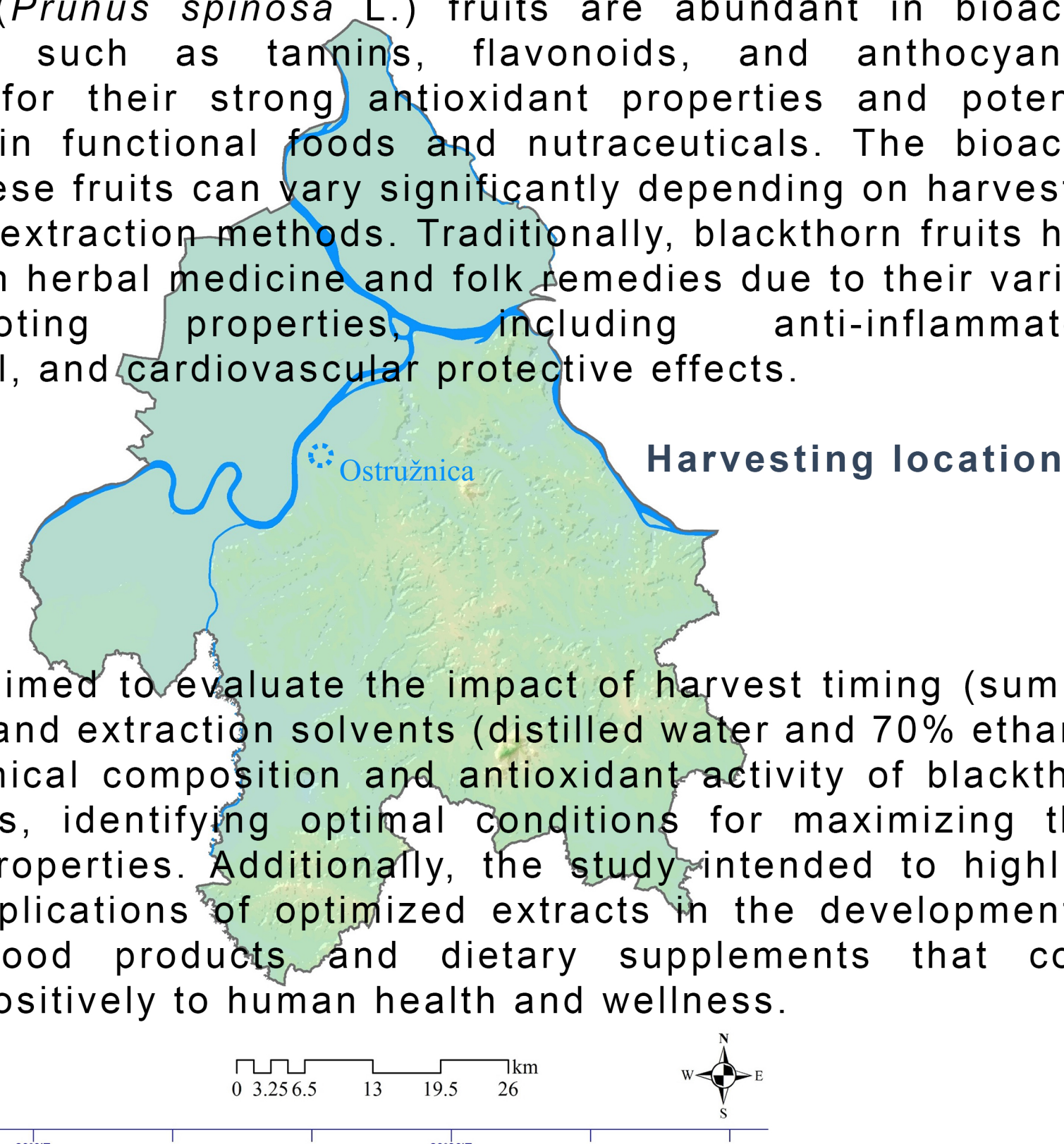


Impact of Harvest Season and Solvent Selection on Bioactive Compound Profiles and Antioxidant Capacity of *Prunus spinosa* FruitsRadenka Kolarov¹, Mirjana Ljubojević¹, Jelena Čukanović¹, Djurdja Petrov², Nevenka Galečić²,
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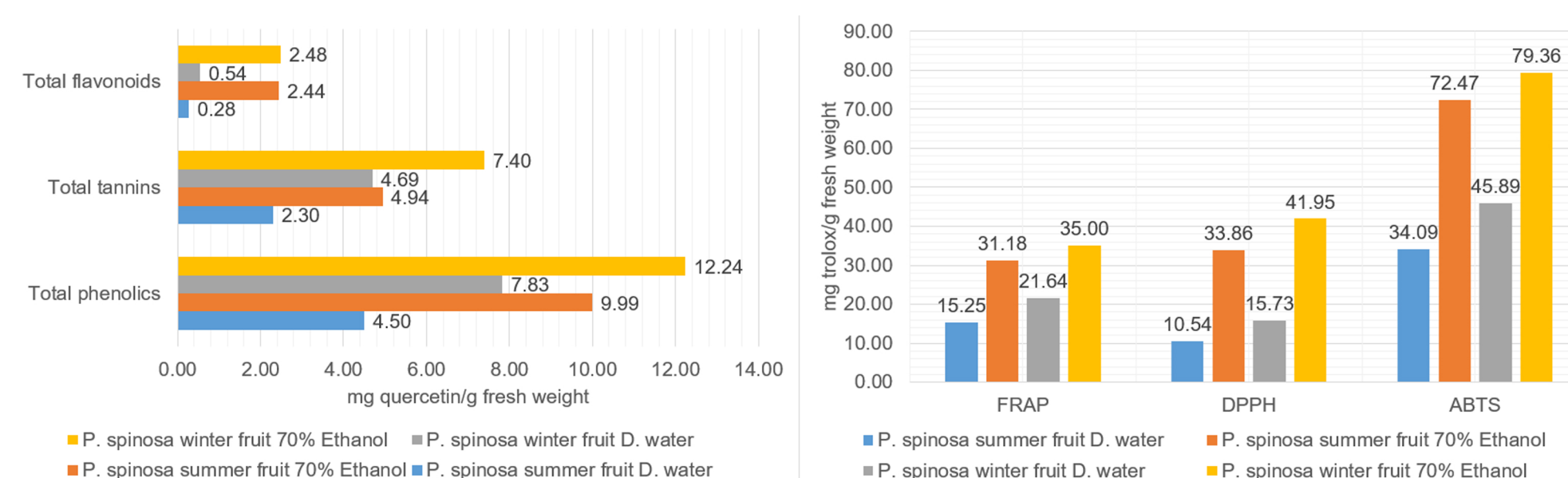
INTRODUCTION & AIM

Blackthorn (*Prunus spinosa* L.) fruits are abundant in bioactive compounds, such as tannins, flavonoids, and anthocyanins, recognized for their strong antioxidant properties and potential application in functional foods and nutraceuticals. The bioactive profile of these fruits can vary significantly depending on harvesting season and extraction methods. Traditionally, blackthorn fruits have been used in herbal medicine and folk remedies due to their various health-promoting properties, including anti-inflammatory, antimicrobial, and cardiovascular protective effects.



RESULTS & DISCUSSION

Significant seasonal and solvent-dependent variations were observed in bioactive compound concentrations and antioxidant activities. Winter-harvested fruits consistently demonstrated higher concentrations of tannins (104% increase in water extracts, 50% in ethanol extracts), flavonoids (93% increase in water extracts), and anthocyanins (61% increase in water extracts). Interestingly, summer ethanol extracts contained 15% higher anthocyanin content compared to winter ethanol extracts. Antioxidant activity determined through FRAP, DPPH, and ABTS assays revealed notably enhanced values in winter fruits, with water extracts showing a 35–49% increase and ethanol extracts a 9.5–24% increase compared to summer extracts.



These findings suggest that the combination of post-frost exposure and ethanol extraction significantly enhances the antioxidant potential of blackthorn fruits.

METHOD



CONCLUSION

Harvest timing and solvent selection significantly influence the bioactive content and antioxidant efficacy of blackthorn fruits. Winter fruits extracted with ethanol present the most beneficial profile, underscoring their suitability for developing enhanced functional foods and nutraceutical products. Optimizing these factors can substantially improve the nutritional and therapeutic potential of blackthorn-based products. Future studies should further investigate the health impacts of these optimized extracts in clinical trials and explore their incorporation into various functional food formulations.



FUTURE WORK / REFERENCES

Future studies should further investigate the health impacts of these optimized extracts in clinical trials, evaluating bioavailability and long-term health benefits. Additional research should explore the integration of these extracts into diverse food matrices and evaluate consumer acceptance. It would also be valuable to examine the economic feasibility of large-scale extraction processes and sustainable agricultural practices aimed at enhancing the yield and quality of blackthorn fruits.

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