

DETECTION OF CHANGES IN THE WATER, BLACKCURRANT- AND RASPBERRY JUICE FT-IR SPECTRUM IN THE RANGE 2500–4000 CM⁻¹[1]

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Abstract: The infrared spectra of ultrapure water, blackcurrant- and raspberry juices were measured in the OH stretching vibration region 2500–4000 cm⁻¹. It has been demonstrated that by using the modified sample compartment, which has been purged with N₂, it is possible to measure reproducibly the infrared spectra of water and juices in the named OH stretching region.

The graphical comparison of raw spectra illustrates that the differences which occur in the spectra of water and juices are hard to differentiate. For the clear distinction of

differences in spectra, there are four hidden peaks identified in the analysis of spectra by using the deconvolution method. The error bars in Fig. 1 show that deviations in the measurements of spectra are very low and fail to pose any impact on the results. It was established that the developed method can be used for the detection of changes in the FT-IR transmission spectra of water, juices and aqueous solutions with low molar concentrations of additives. The distinction of changes in the spectra is a precondition for research of the clustered structures of water.

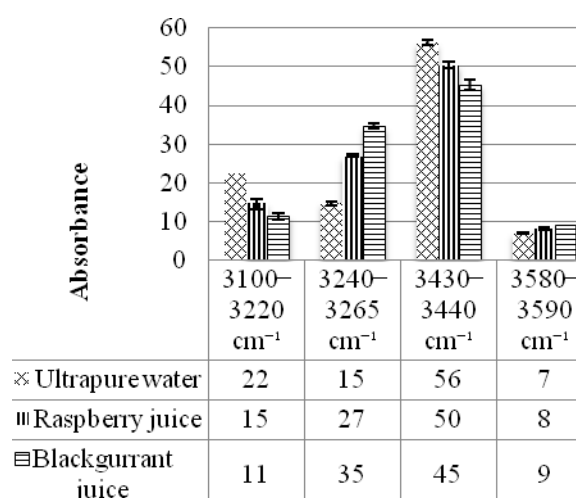


Fig. 1. Comparison of integrated hidden peaks area in percent of the total area of the deconvoluted FT-IR spectra ultrapure water, blackcurrant juice and raspberry juice in the range 2500–4000 cm⁻¹

References

1. P.Laurson, H.Kaldmäe, A.Kikas, U.Mäeorg, 2016, *Agronomy Research*, 14 (5), 1645–1651.



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