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Introduction

During the food processing of tomato (*Solanum lycopersicum* L.), in addition to the main product (juice, concentrate), a large amount of by-products are also produced. Tomato pomace contains a number of valuable components and can be further utilized in other forms in various areas of the agricultural sector (Ahmad et al., 2021; Silva et al., 2019).

Aim

The aim of this research was to investigate the effectiveness of acetone, ethanol and methanol as extraction solvents for extracting the valuable components of pomace and to study their antibacterial effects in case of the industrial hybrid tomato cultivar 'Heinz 1015 F1'.

Materials and Methods

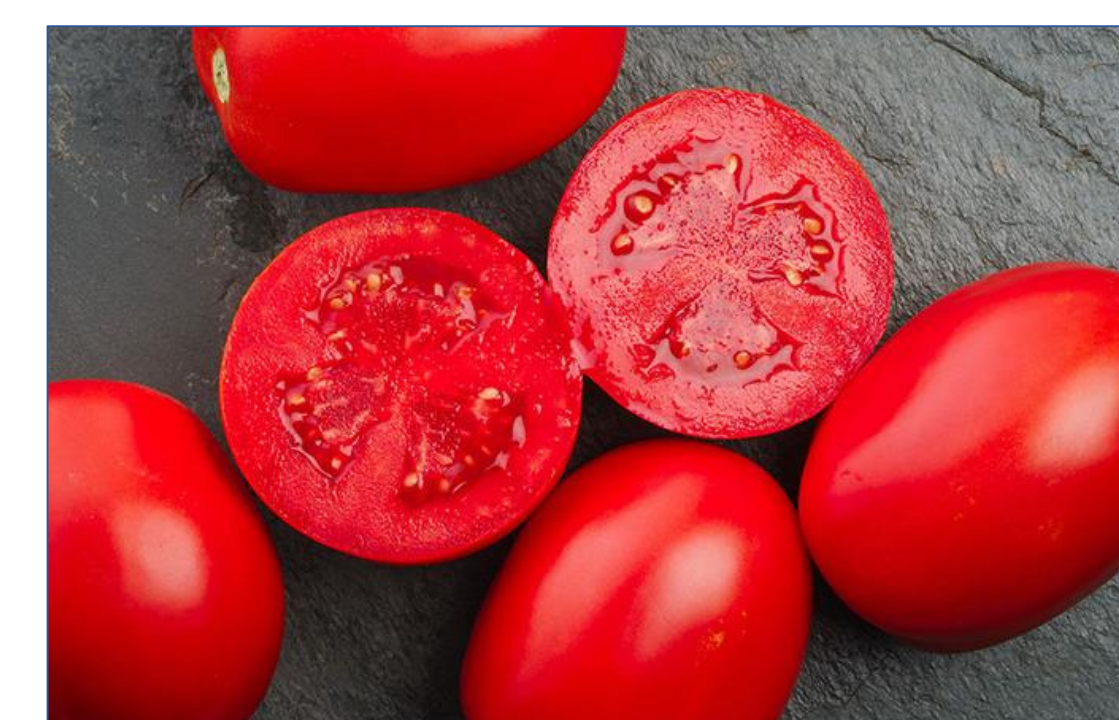
The tomato pomace samples were dried in an LP-322 oven at 80 °C to a moisture content of 3-4% and then ground with a laboratory grinder until a powdery stock was obtained.

The extraction conditions used in the experiments were as follows: sample : solvent ratio 1:10 and 1:30, extraction temperature: 20 and 60 °C, ultrasonic treatment time: 0 and 30 min, 35 kHz).

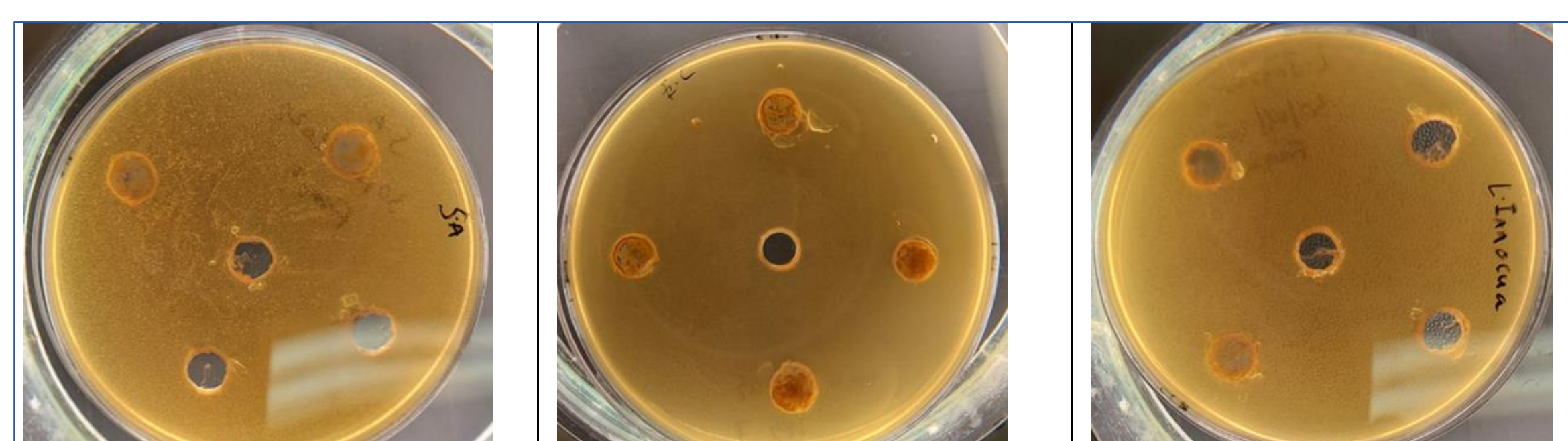
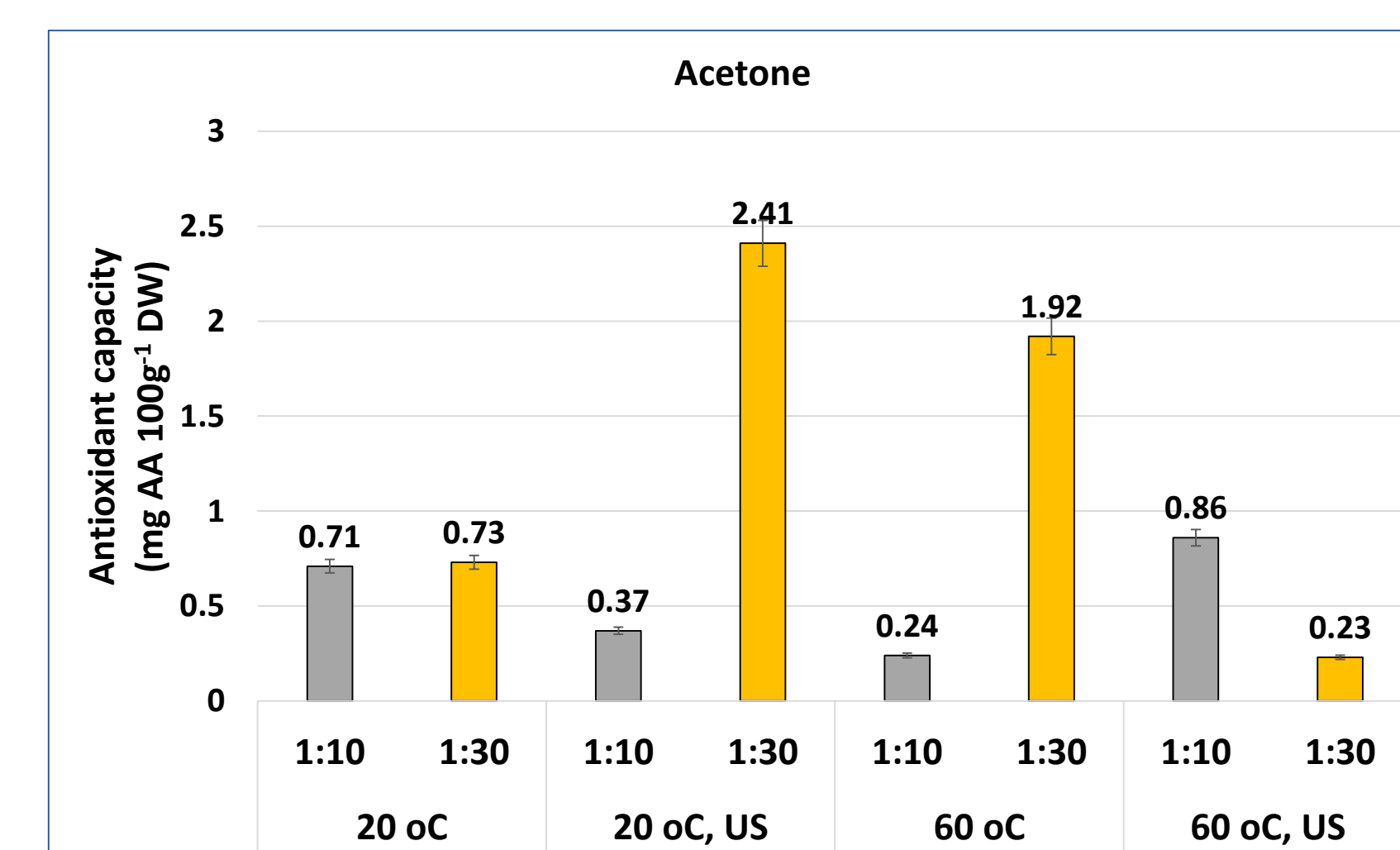
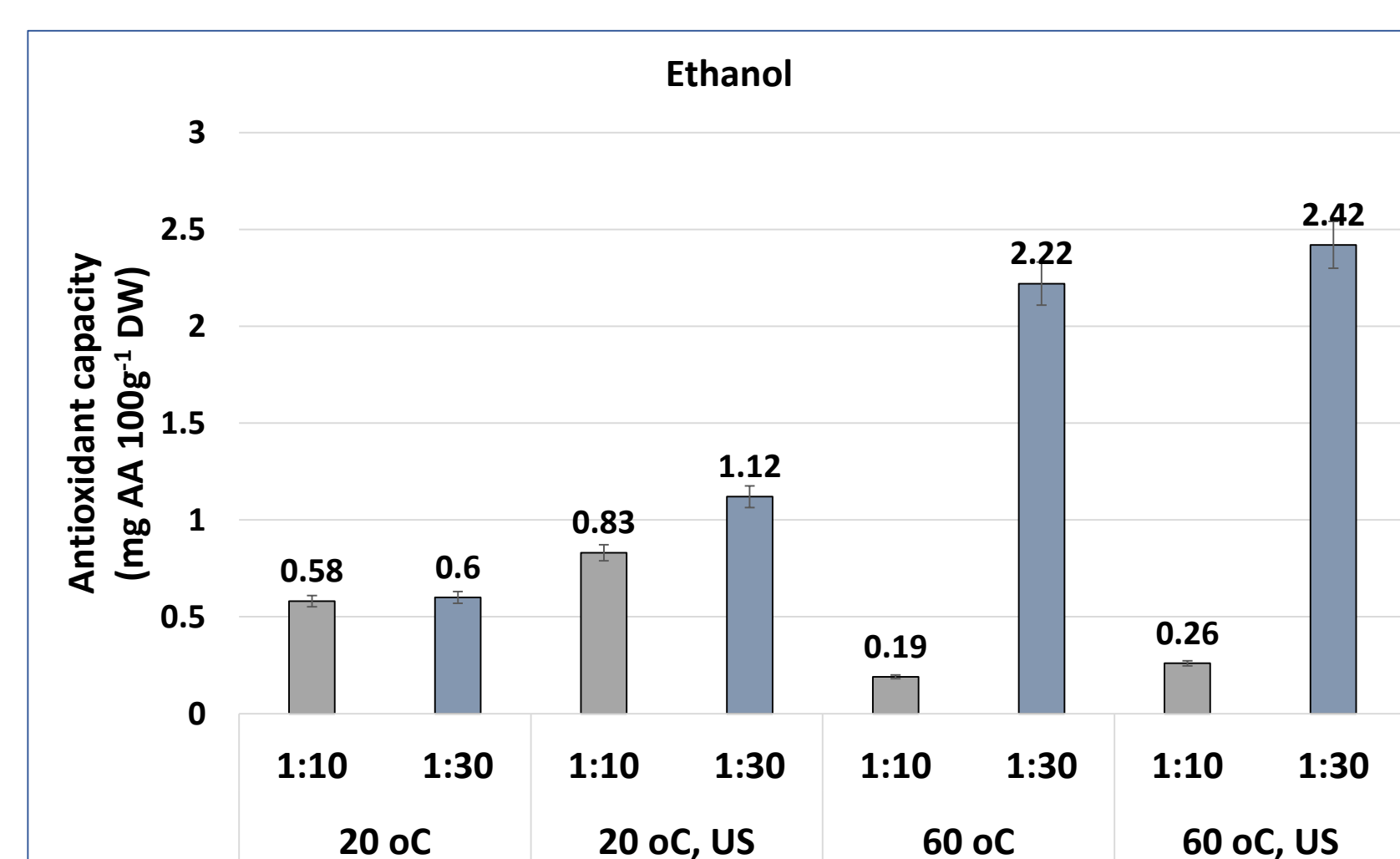
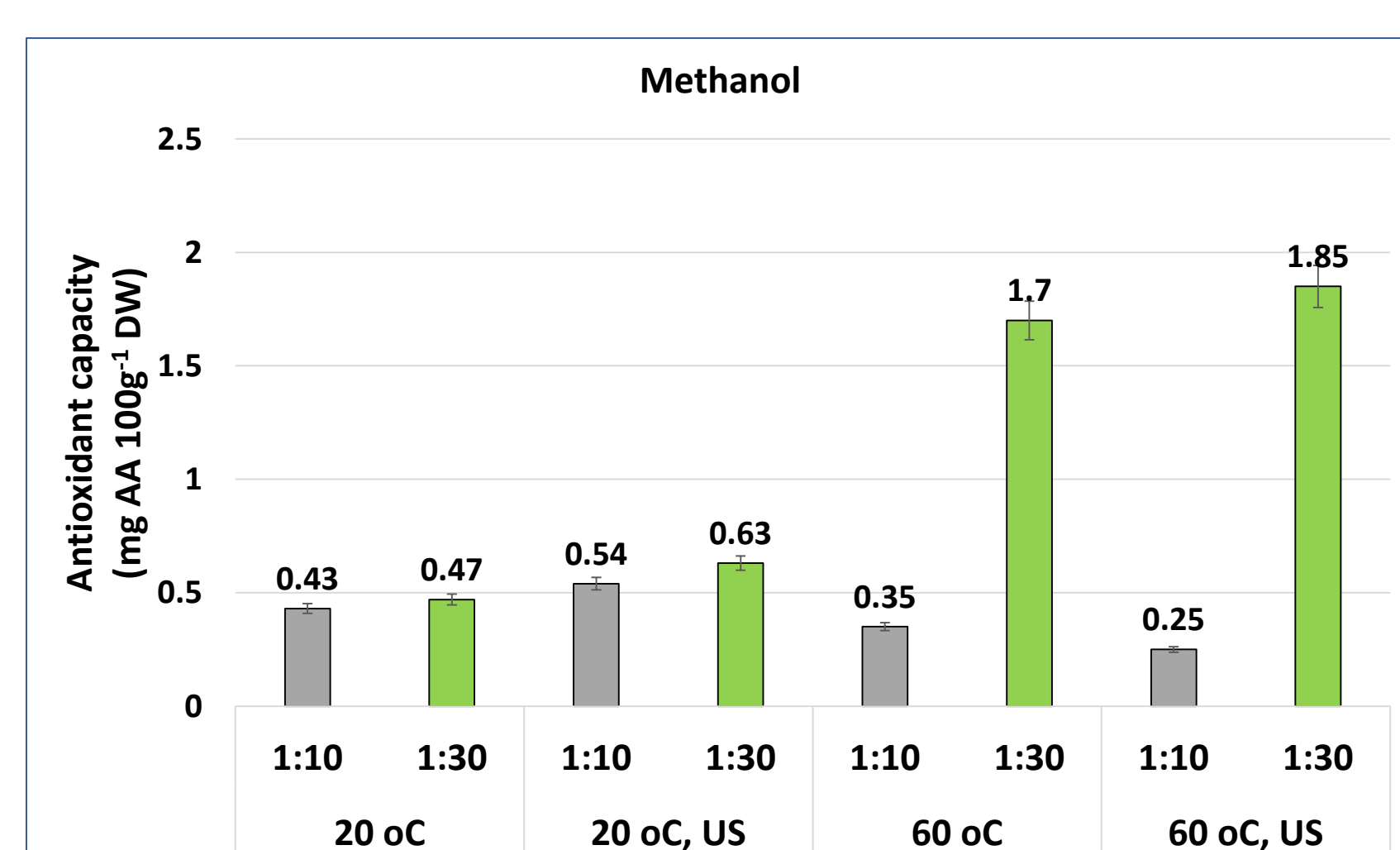
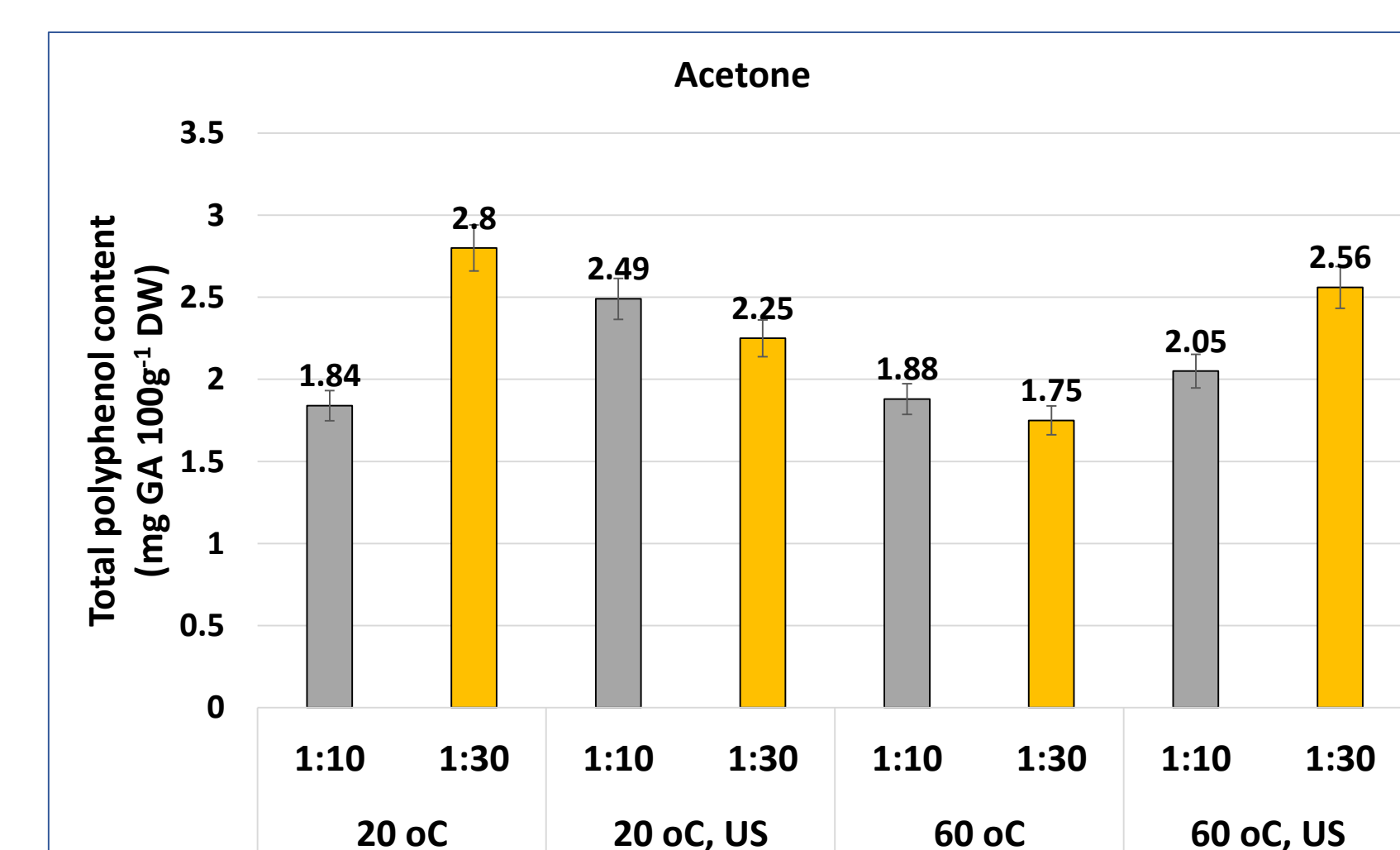
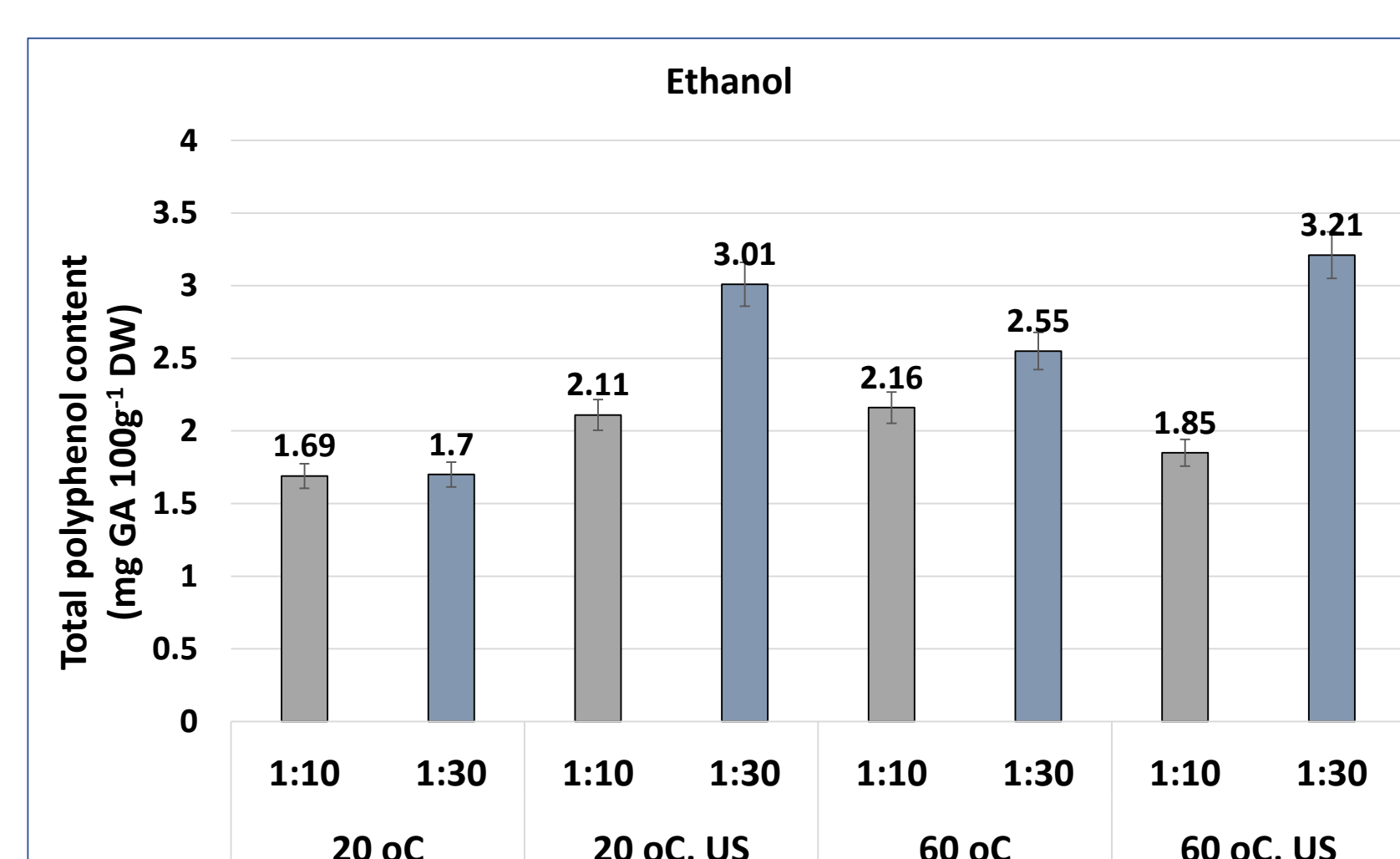
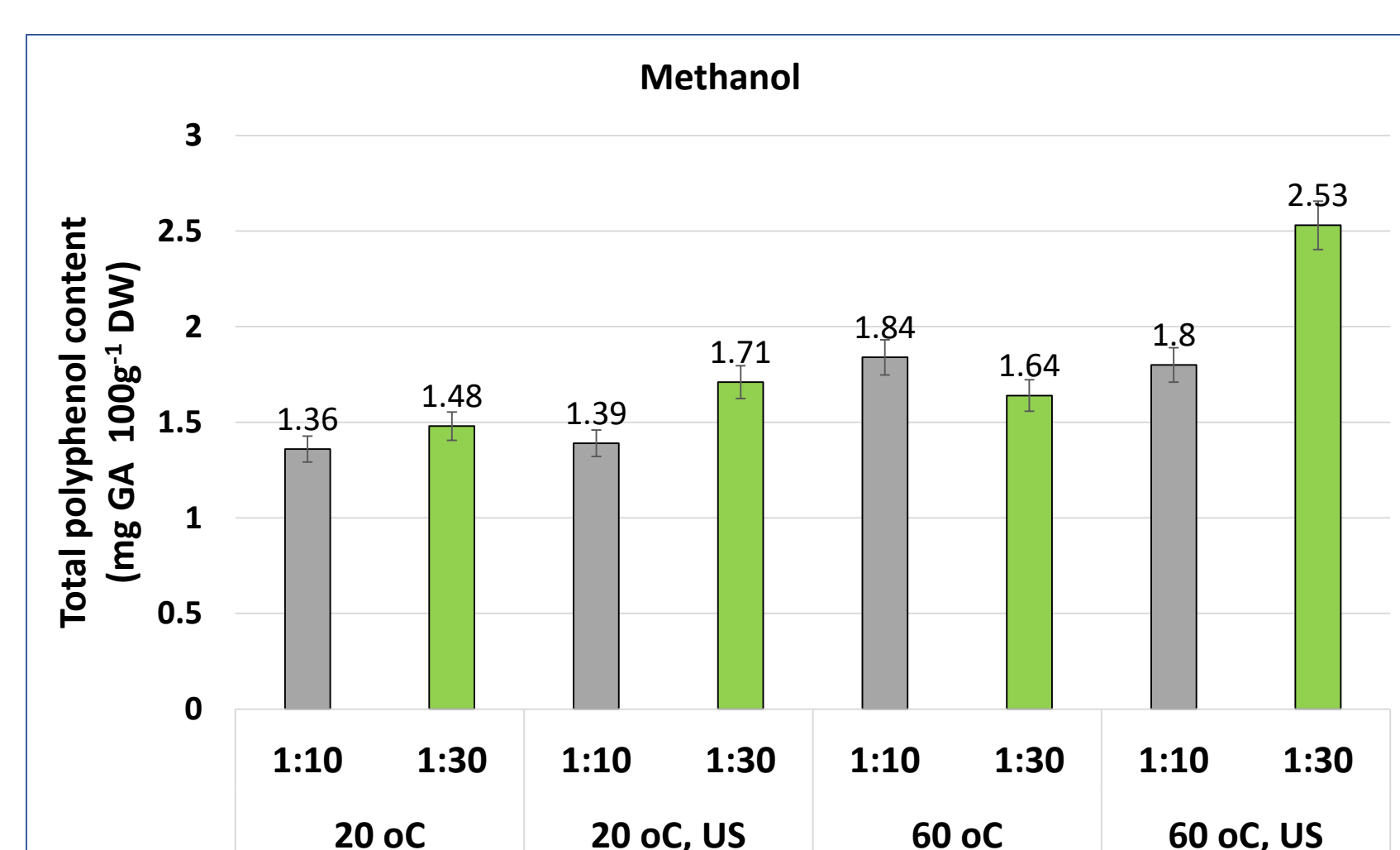
24 extraction combinations were performed and their efficiency was evaluated by assessing the total polyphenol content (TPC) and antioxidant capacity (FRAP).

For the antioxidant capacity determination, the experiment was carried out by means of FRAP method proposed by Benzie and Strain (1996). FRAP assay was conducted by Hitachi U-2900 spectrophotometer at 593 nm. FRAP value was expressed as ascorbic acid (AA) equivalents, mg AA 100g⁻¹ DW. Total polyphenol content was investigated using Folin-Ciocalteu's reagent and sodium-sulphate solution according to the method of Singleton and Rossi (1965). Absorbance was monitored by Hitachi U-2900 spectrophotometer at 765 nm. The results were expressed as gallic acid (GA) equivalents, mg GA 100g⁻¹ DW.

Antimicrobial activity was tested on 5 samples with the highest antioxidant capacity and total polyphenol content by the agar well diffusion method for inhibition of Gram-positive bacteria (*Staphylococcus aureus*, *Listeria innocua*) and Gram-negative bacteria (*Escherichia coli*).



Results



Results of agar hole test for inhibition of *Staphylococcus aureus*, *Escherichia coli* and *Listeria innocua*

Conclusion

The results showed that the total polyphenol content of the extracts ranged from 1.36 to 3.21 mg GE 100 g⁻¹ DW, while the total antioxidant capacity ranged from 0.23 to 2.42 mg AA 100 g⁻¹ DW. Ethanol proved to be the most effective of the solvents tested, when used in a 1:30 ratio at 60 °C, supplemented by a 30 min ultrasonic treatment. In case of the five extracts with the best extraction values, no antimicrobial effect was detected against any of the tested microbes.

In conclusion, the experiments initiated are promising. In the future, it is worth to deal with the combined effect of solvents. In addition to the antimicrobial activity, it is also notable to investigate the antioxidant activity and flavonoid composition of the extracts.

References

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