

PHYTOCHEMICAL PROFILING OF PRESSURIZED LIQUID EXTRACTS FROM PHYSALIS PERUVIANA CALYCES BY LC AND GC COUPLED TO Q-TOF MASS SPECTROMETRY.

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Motivation and aims

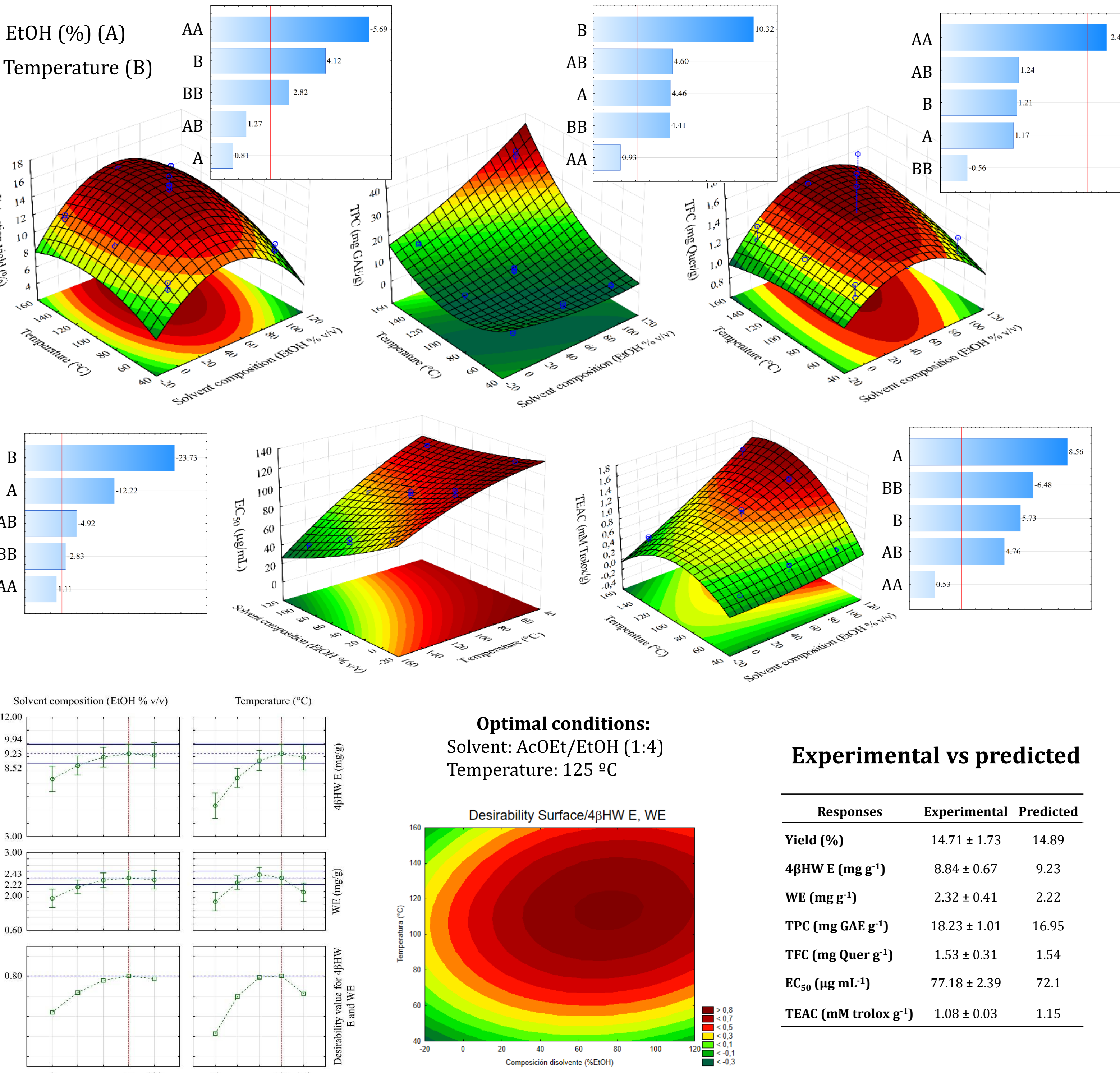
Physalis peruviana L. (Solanaceae), commonly named cape gooseberry, goldenberry or physalis, is a native plant from South America and it is also grown in countries of Central America, South Africa, tropical Africa, Asia and Europe. The popularity of this plant is due to the organoleptic properties as well as the nutritional and functional value of its fruits, which represent a promissory source of bioactive phytochemicals such as carotenoids, withanolides and phytosterols, among others [1].

The calyx of goldenberries is one of the generated wastes during both the fresh consumption and the transformation process of this fruit. A single plant has potential to yield 300 fruits, about 22-33 tons of waste are generated per cultivated hectare of *P. Peruviana* [2]. Hence, considering the bioactive potential of this food by-product, a revalorization strategy based on a pressurized liquid extraction (PLE) procedure was optimized in order to obtain withanolide-rich extracts from *P. peruviana* calyces with the highest antioxidant capacity

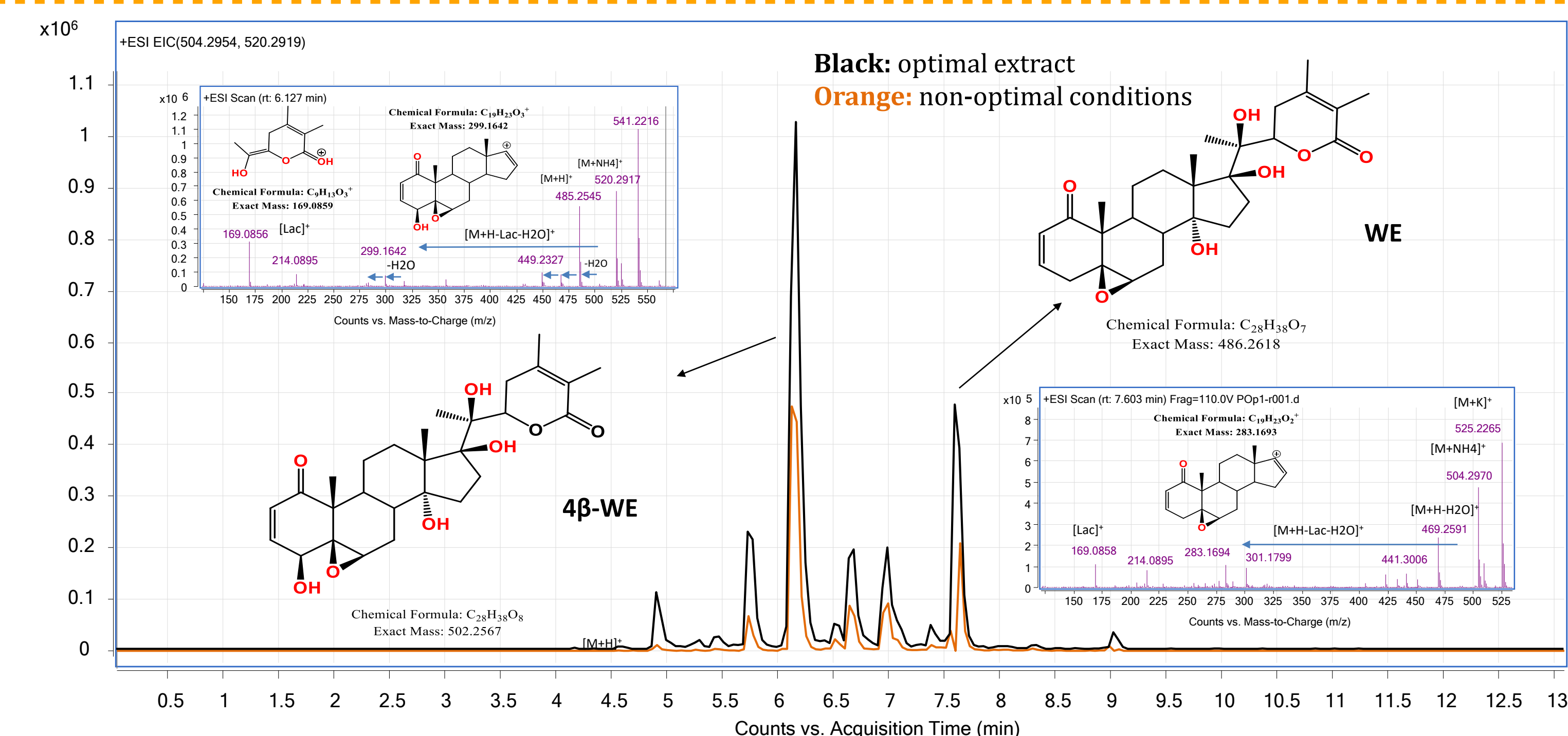
References

- [1] Puenta L. et al., Food Research International 44 (2011) 1733
[2] Yildiz, G. et al., Journal of Food Science and Technology 52 (2015) 2320.

Response surface optimization: 3-levels factorial (3²) experimental design



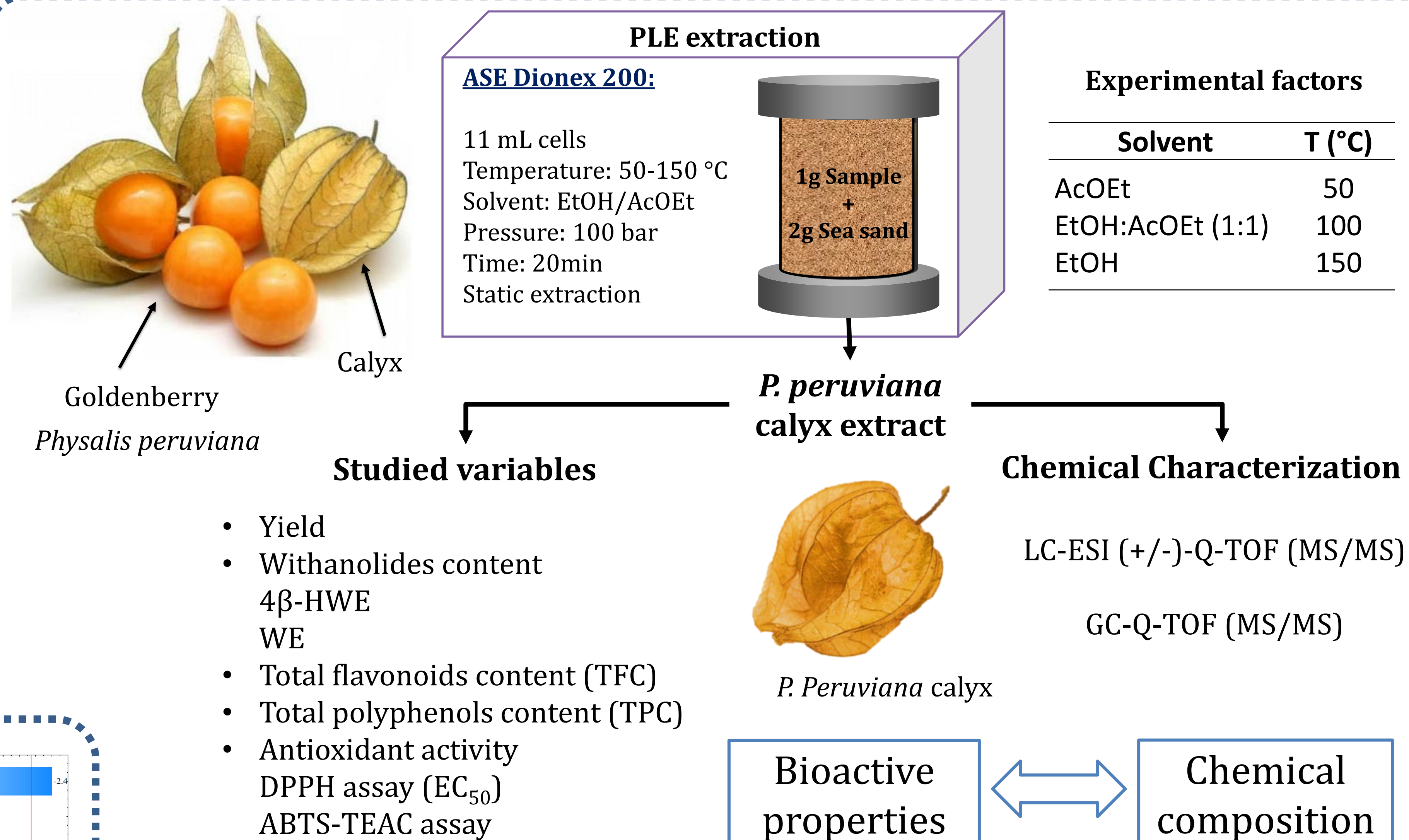
LC-Q-TOF withanolides profile of enriched extracts



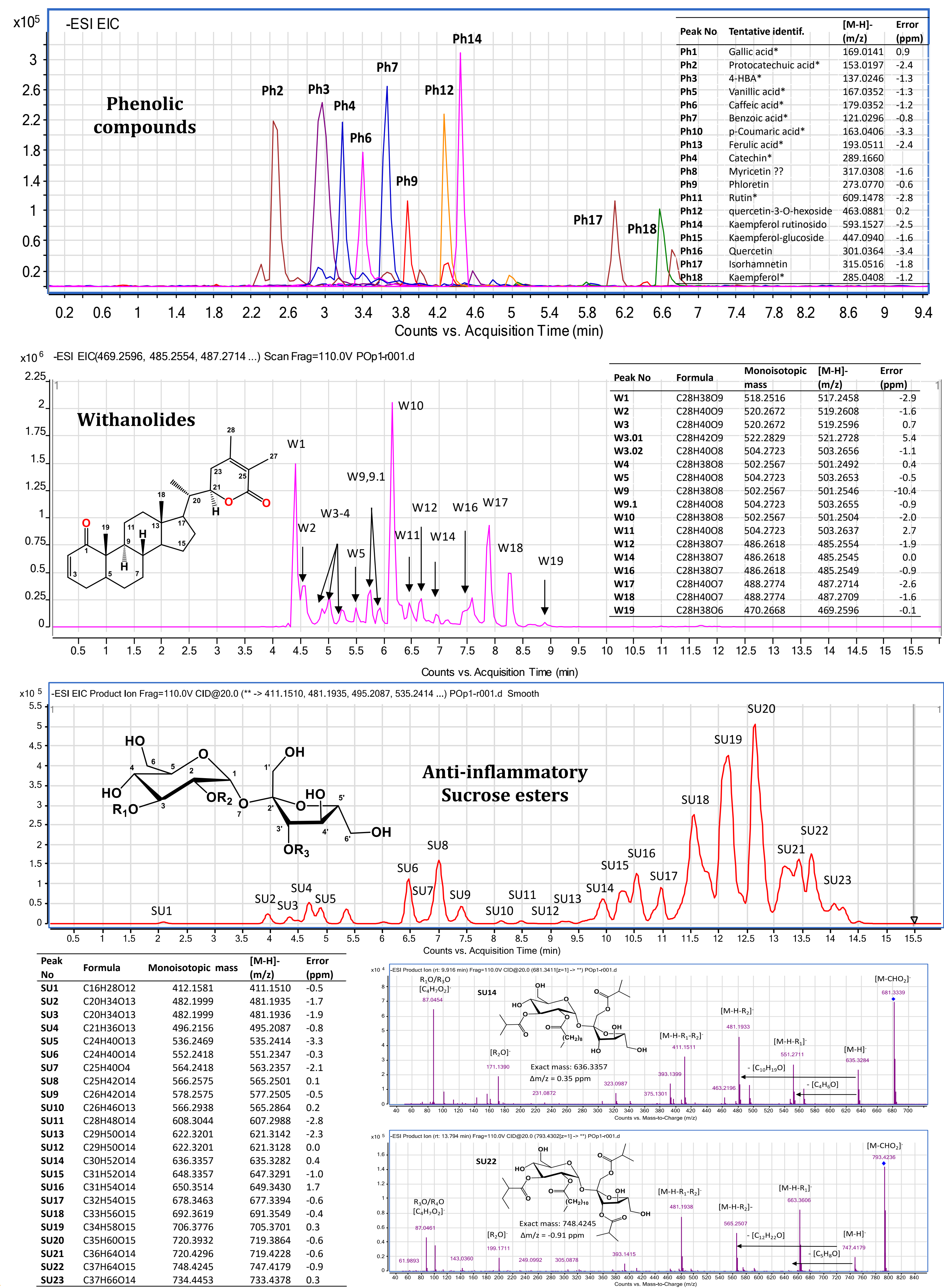
Conclusions

- Withanolide-rich extracts from *P. peruviana* calyces were obtained after PLE optimization. The enriched extracts showed the highest content on phenolic compounds, exhibiting the highest antioxidant activity.
- Optimal extracts were characterized by LC-q-TOF, leading to the tentative identification of the major phenolic components, withasteroids (C28 isoprenoids) including withanolides, as well as a large family of anti-inflammatory sucrose esters.
- The volatile fraction was analyzed by GC-q-TOF, revealing the presence of relevant phytosterols and tocopherols.

Experimental workflow



Chemical characterization of *P. peruviana* calyx extracts



Acknowledgments

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