

Influence of different extraction conditions on the bioactivity and polyphenol profile of propolis extracts

Roy Rivero¹, Diego Archaina¹, Carolina Schebos², Natalia Sosa¹

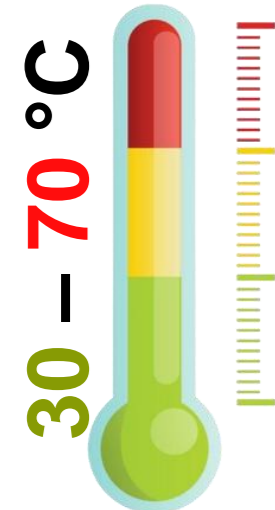
1. Instituto de Ciencia y Tecnología de los Alimentos de Entre Ríos (ICTAER); 2. Instituto de Tecnología de Alimentos y Procesos Químicos (ITAPROQ)

INTRODUCTION & AIM

The use of natural compounds in food development is gaining popularity in response to consumers' growing concerns about their diet. In this context, the application of extracts rich in functional compounds presents an attractive option for industries, with propolis standing out as an ingredient of great potential. The objective of this research was to determine the optimal extraction conditions and evaluate their influence on the polyphenol profile of propolis extracts rich in functional compounds.

METHOD

Raw propolis



10 – 40 min

Propolis extract



Box-Behnken design: Three factors (Time, ethanol concentration, and temperature); Responses (Antioxidant capacity -AC-, Total polyphenolic compounds -TPC-).

✓ Antioxidant Capacity (AC)

✓ Total Polyphenolic Compounds (TPC)

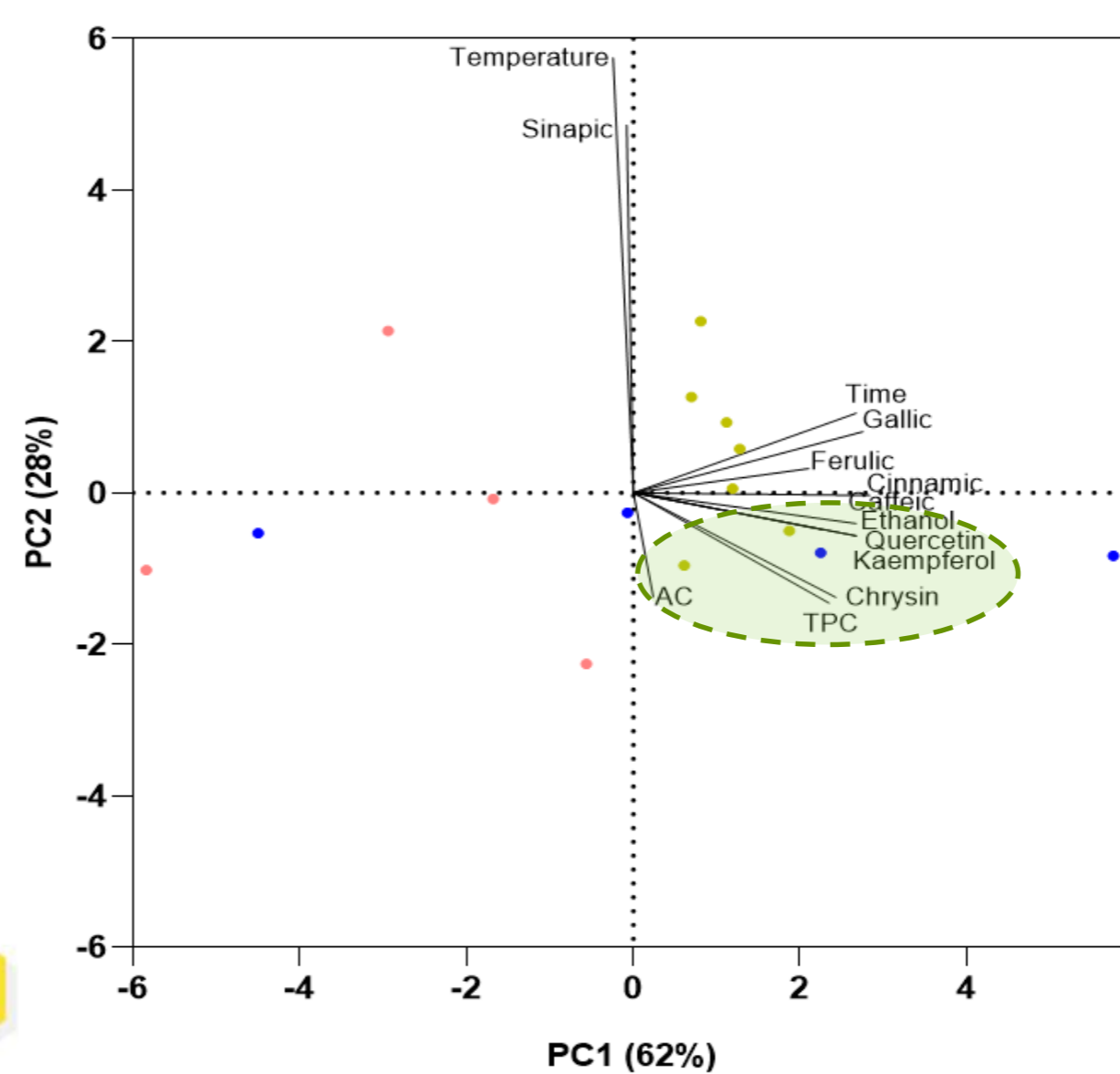
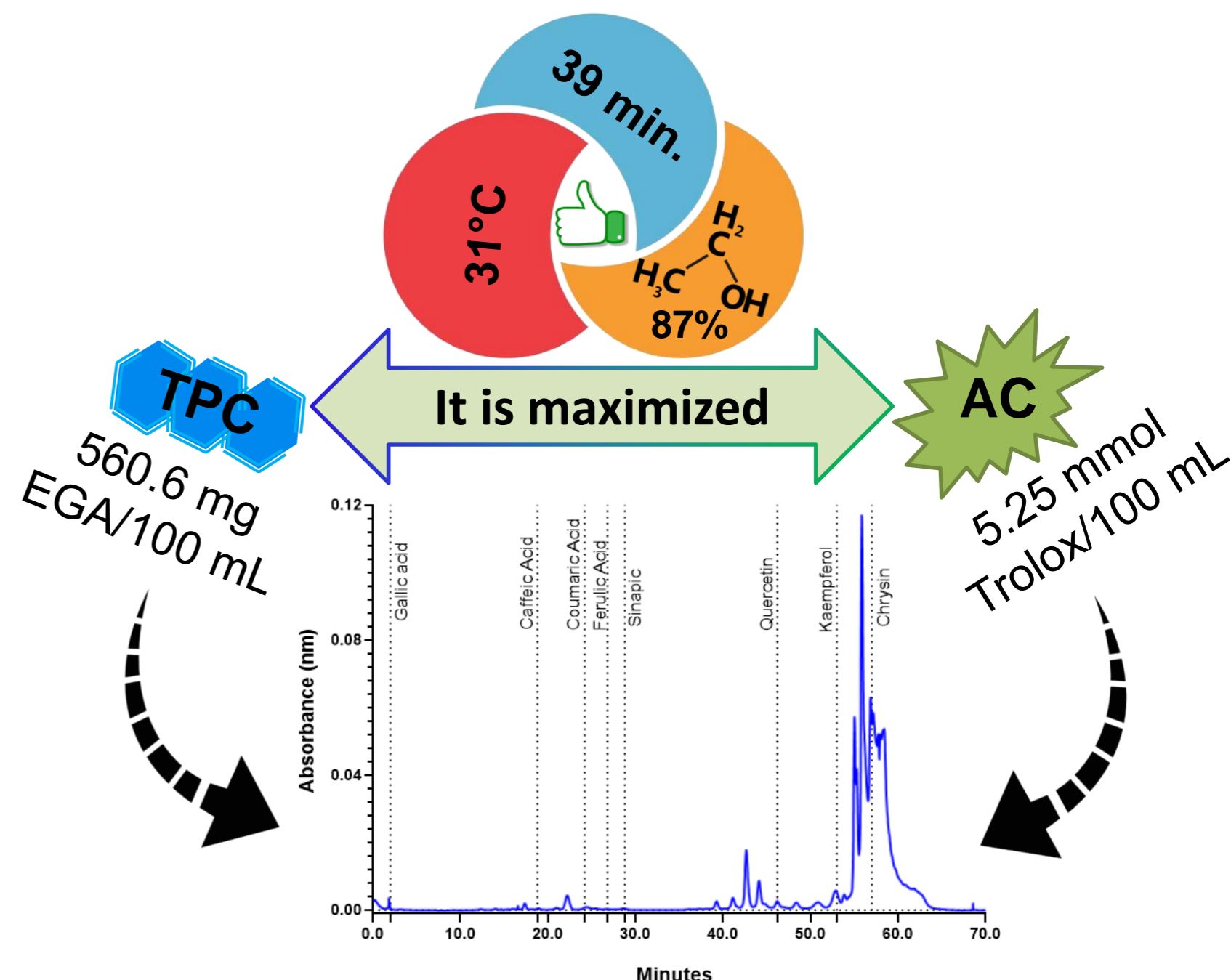
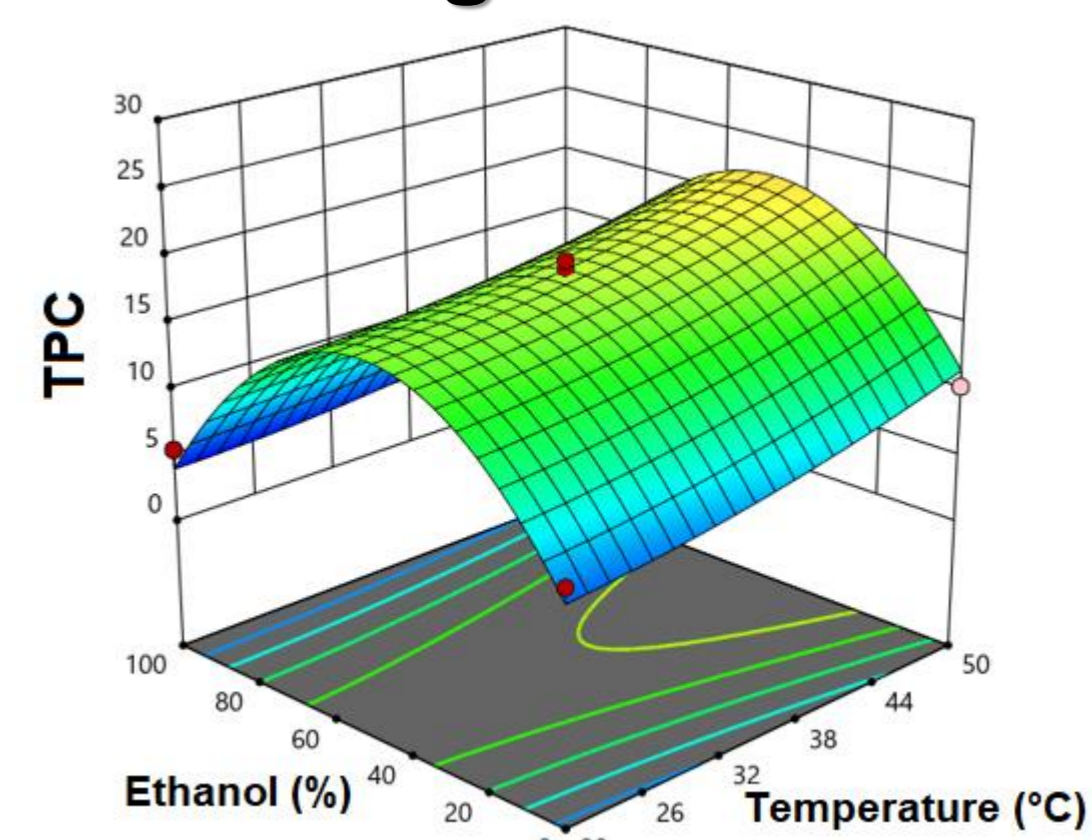


✓ Determination of polyphenol profile by HPLC.

RESULTS & DISCUSSION

Experimental design

Two blocks
15 processes
in duplicate.



✓ The functional characteristics are mainly associated with Quercetin, Kaempferol, and Chrysin.

✓ The functional characteristics are directly related to the increase in ethanol and inversely related to temperature.

✓ Time is the factor that has the least impact on functional characteristics, but prolonged extraction periods are more favorable at low temperatures.

CONCLUSION

It was observed that the functional activity of the extracts is associated with higher amounts of Chrysin, Kaempferol, and Quercetin, which are mainly influenced by increased ethanol concentration and lower temperatures.