

## INTRODUCTION

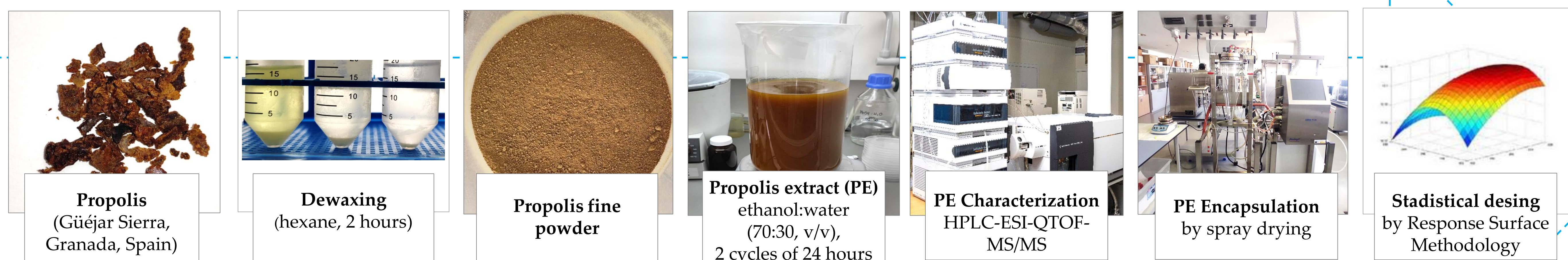
Propolis is a natural product that bees make from wax, salivary secretions and resinous material that bees collect from flowers and leaf buds of certain plants. Its composition consists mainly of resins and balms, wax, volatile oils, pollen, organic and mineral substances. In addition, propolis contains a wide variety of bioactive compounds such as flavonoids, phenolic acids derivatives and other phenolic compounds as well as terpenes and terpenoids. All these bioactive compounds confer several beneficial properties to propolis, such as antioxidant, anti-inflammatory and antifungal, among other.

However, some of these compounds with bioactive properties are easily degraded. To prevent its degradation, the spray drying technique can be used. This technique allows to cover and protect bioactive compounds in a polymer matrix and release these compounds in different parts of the gastrointestinal tract.

For this, polymers with release properties in the colon such as inulin are used since this polysaccharide can act as substrate for the bacterial microbiota inhabiting the large intestine. The degradation of polysaccharide matrix molecules depends mainly on the hydrolysis of the glycosidic bonds between the molecules and the subsequent release of the bioactive components. In this way, the bioaccessibility of the bioactive compounds present in propolis is increased.

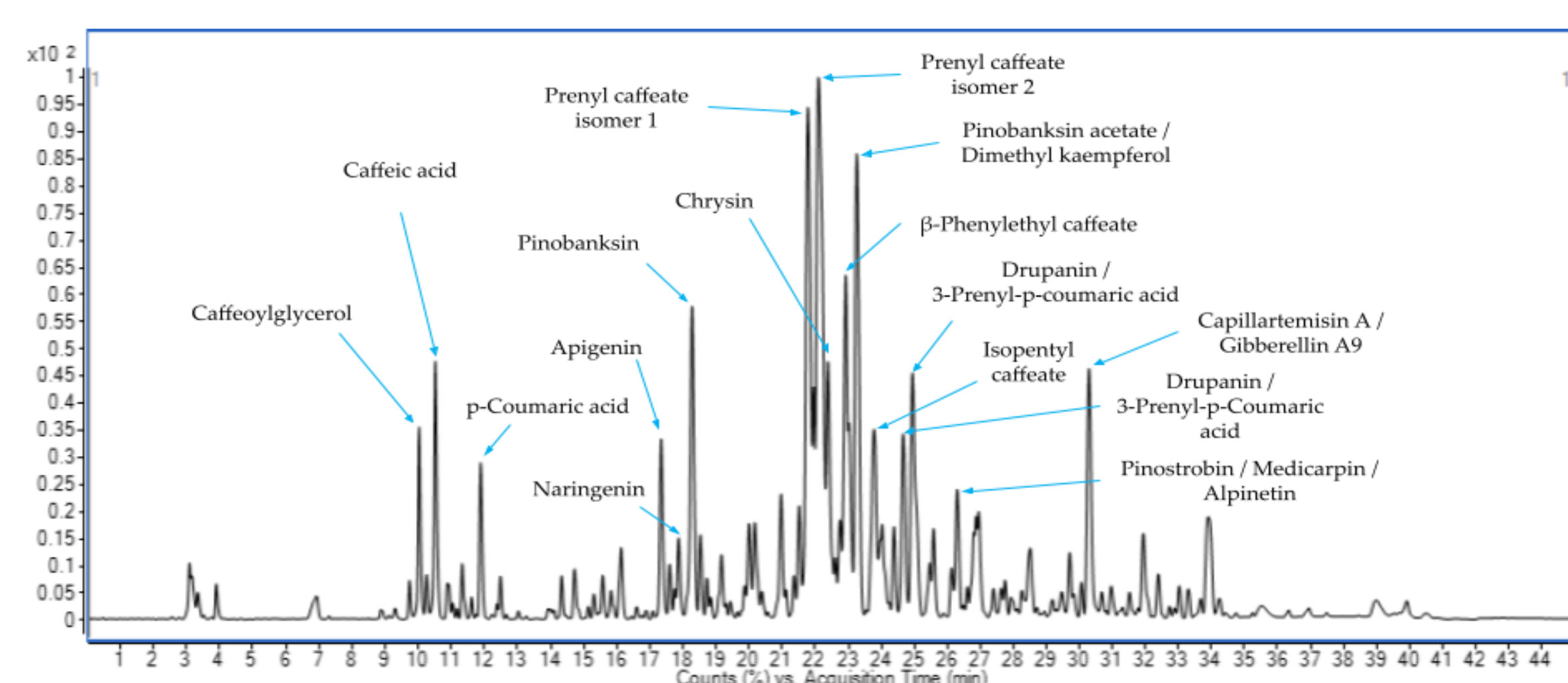


## MATERIALS AND METHODS



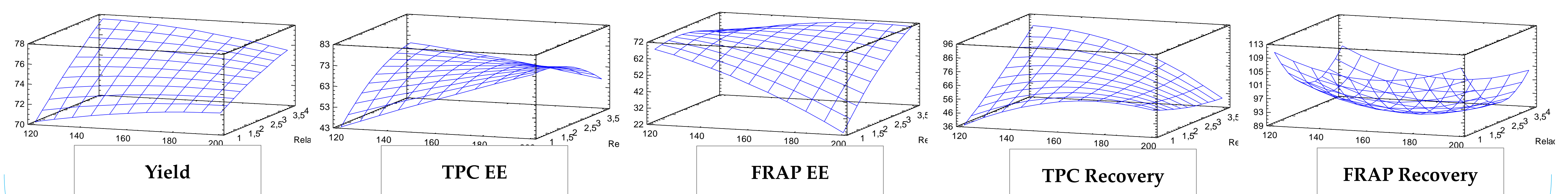
## RESULTS AND DISCUSSION

### I. Characterization of the propolis extract (PE) by HPLC-ESI-QTOF-MS/MS

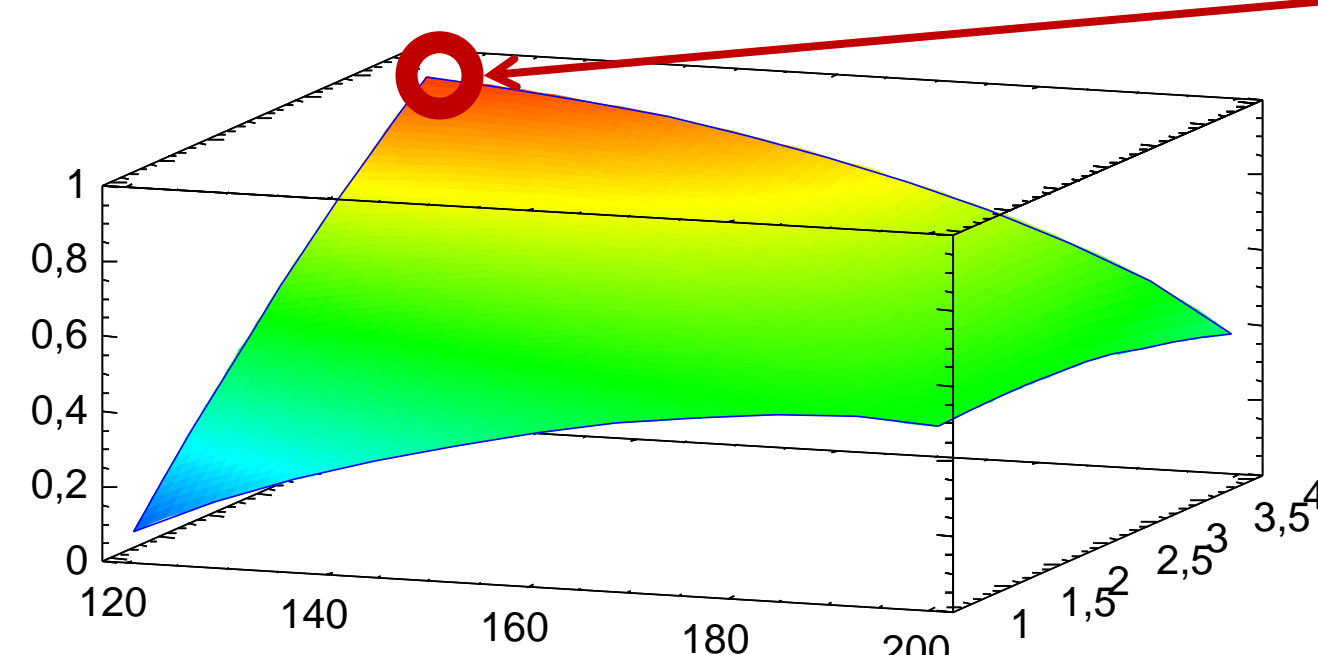


- ✓ 66 compounds detected and 58 compounds tentatively identified.
- ✓ The major compounds detected in PE were:
  - **Phenolic acid derivatives**, such as caffeic acid and coumaric acid derivatives or drupanin
  - **Flavonoids**, such as pinobanksin, chrysin, pinocembrin and their derivatives.
- ✓ Major compounds correspond to:
  - Prenyl caffeate isomers
  - Pinobanksin acetate
  - Pinobanksin

### II. Encapsulation of phenolic compounds from PE by spray drying and



#### Optimal conditions



Factor	Optimal condition	Yield (%)	TPC EE (%)	TPC Recovery (%)
Temperature (°C)	112.65	78.4	71.7	95.0
PE:In Ratio	1:4.315			

## CONCLUSIONS

- ✓ PE microparticles with inulin by spray drying is a good alternative to design microparticles with target delivery, achieving good yields, high EE% and Recovery, allowing its use in the development of functional and/or nutraceutical ingredients.
- ✓ Besides, the process carried out (pretreatment, extraction of phenolic compounds from propolis and its microencapsulation) is a successful methodology for the formulation of natural ingredients and/or propolis nutraceuticals, which contribute to the development of bee production and revalues this resource.

## ACKNOWLEDGEMENTS: