FOOD-COMPATIBLE METHOD FOR STABILIZATION OF OLIVE POMACE POLYPHENOLS

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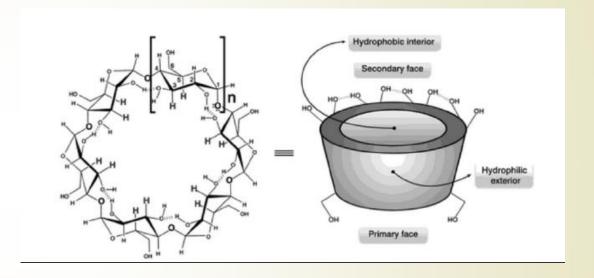
OLIVE POMACE

- Waste from the olive oil production
- Serious environmental issue
- Heavy load of phenolic compounds
- Poor technological properties



NOVEL FUNCTIONAL FOOD FORMULATION

- Cyclodextrins
- Encapsulation agents
- 'Green' extraction methods
- Food-grade solvents

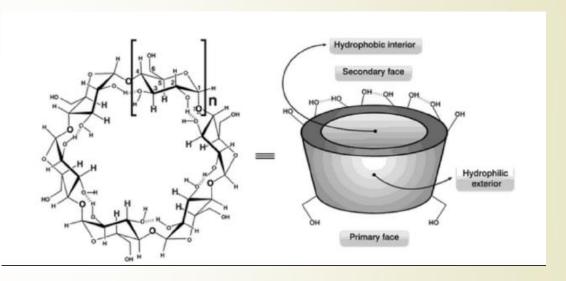


- B (β cyclodextrin)
- RAMEB (randomly methylated β cyclodextrin)
- HPB (hydroxypropyl β cyclodextrin)
- G (γ cyclodextrin)

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PROCEDURE

CASE 1 4 °C, humidity 75 %, dark, 180 days

OP collected from several two-phase olive mills in Croatia

CASE 2 | room temperature, humidity 75 %, dark, 180 days

CASE 3 | room temperature, humidity 75 %, daylight, 180 days

CASE 4 | 60 °C, humidity 75 %, dark, 45 days

TPC (total phenol content - Folin Ciocalteu reagent)

Drying (50 °C / 36 h)

Stability study

(antioxidative activity -TEAC method)

Defatting
(Soxhlet
apparatuses
/ petroleum
ether / 4 h)

UAE in combination with CDs as excipients (B, RAMEB, HPB, G) in two concentration levels (8 or 16* mg/mL)

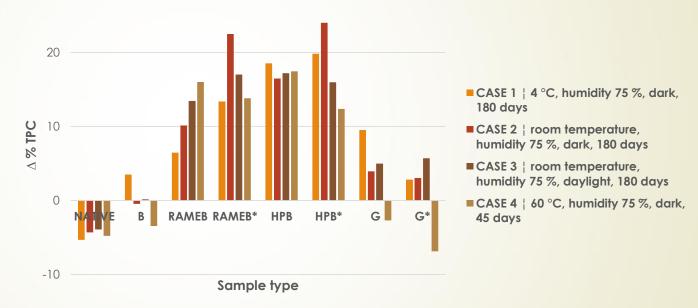
HPLC-FLD (HTS and TS determination)

Milling, sieving (1.25 mm)



- Olive pomace phenols are generally stable
- The greatest protection effect:
 HPB (22 % higher)
 RAMEB (19 % higher)
- Daylight has no effect

Changes of total phenol content in COPE

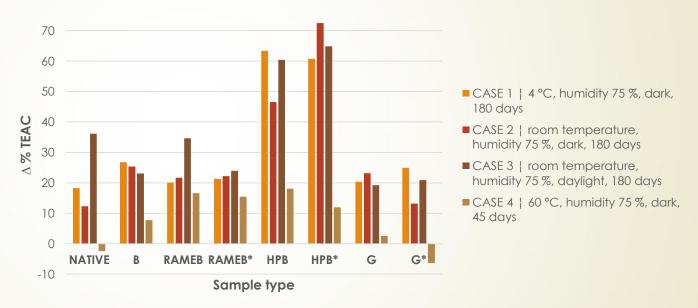




Antioxidative activity

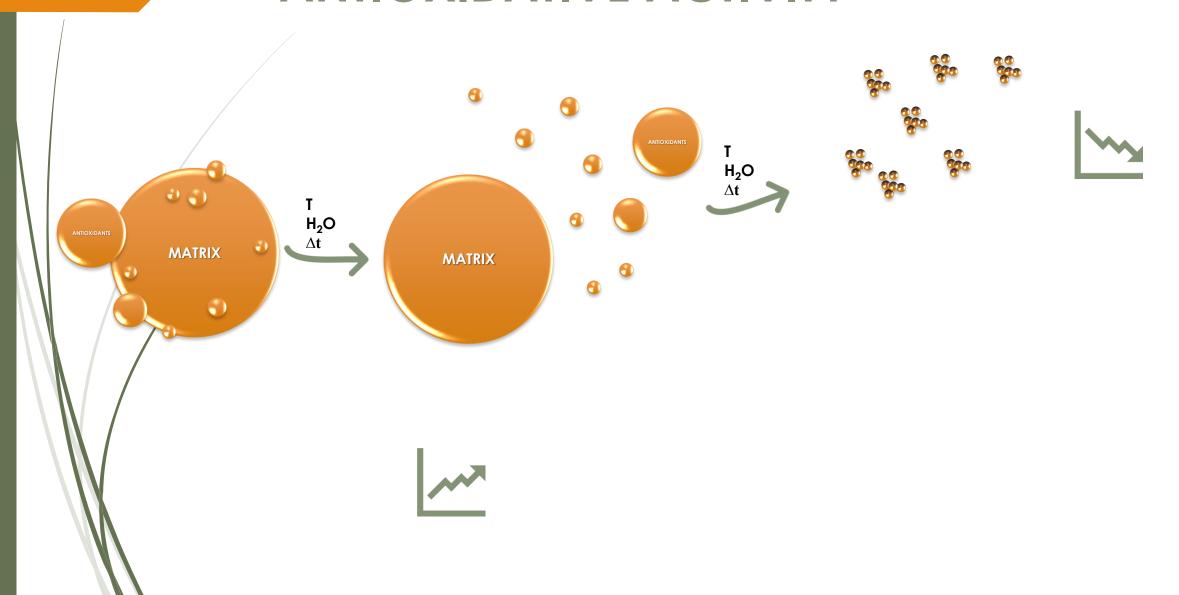
- Increase:HPB (by an average of 34 %)
- Temperature decomposition

Changes of antioxidative activity in COPE

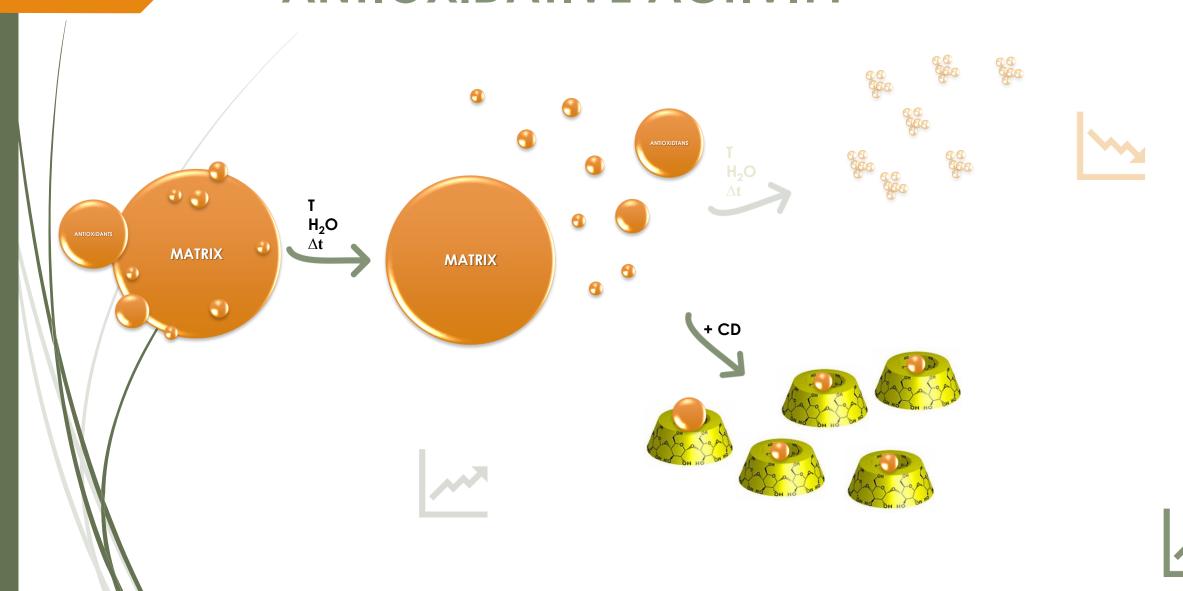




ANTIOXIDATIVE ACTIVITY



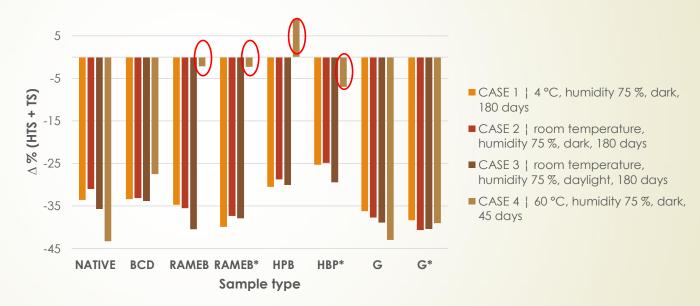
ANTIOXIDATIVE ACTIVITY





- Cyclodextrins showed no influence in CASE 1, 2, and 3 (34 %-decrease)
- The amount did not change at elevated temperature

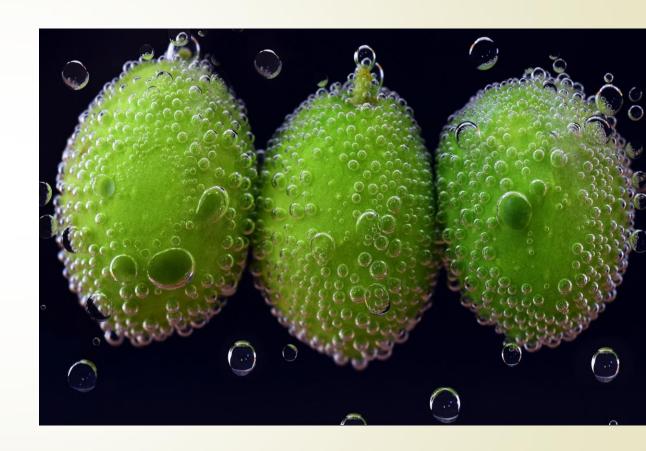
Change of total quantity of HTS and TS in COPE





CONCLUSIONS

- Usage of cyclodextrins provided a possibility to use olive pomace as a functional food ingredient.
- Potential product can be stored at room temperature in the daylight.
- Product cannot be exposed to elevated temperature.
- RAMEB and HPB could be considered the excipients of choice.





- Gastrointestinal stability
- Different extraction methods
- Bioaccessibility

THANK YOU FOR YOUR ATTENTION!

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