

# Determination of Bisphenol A and its Analogues in Honey

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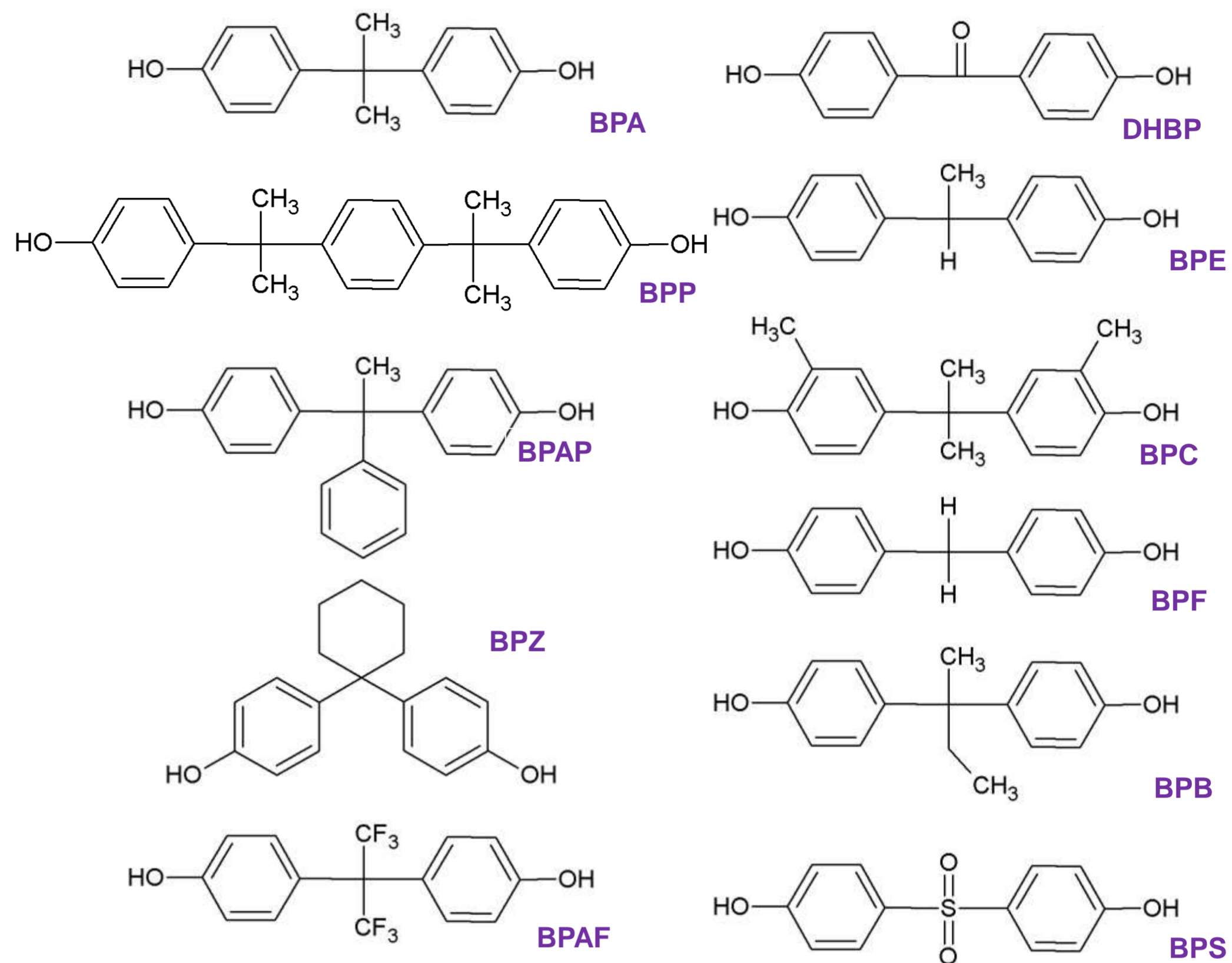
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## INTRODUCTION

Plastics are everywhere and bisphenol A (BPA), a common ingredient in polycarbonate polymer and epoxy resin based consumer goods, has become ubiquitous so that exposure to BPA is unavoidable. BPA exhibits hormone-like properties and growing opposition towards its use has led manufactures to seek out other bisphenolic compounds (BPs) as alternatives. Recent studies indicate that these BPs present their own inherent hazards yet little is known about their possible effects on human health and the environment. The principle route of human exposure is via contaminated food, which makes developing robust analytical methods for assessing their presence in foodstuffs (complex matrices) a priority. The aim of this work was to develop an analytical method capable of determining 11 relevant BPs in honey samples at low levels.



## MATERIALS AND METHODS

### Sample preparation

Honey (10 g) dissolved in HPLC water (100 mL)

Sample filtration (0.45 μm)

SPE optimization

Derivatization process optimization

### Chemical analysis by GC/MS

- Optimization of T programme
- SCAN mode: 3 fragments for identification and quantification of studied BPs

## RESULTS

### SPE

- Oasis HLB™ cartridges (60 mg, 3cc)
- Elution: 0.5 mL acetonitrile + 3 mL ethyl acetate

### Derivatization

- Agent: MTBSTFA (30 μL)
- Solvent: ethyl acetate (220 μL)
- Time and T: 16 h at 60°C

### GC/MS analysis

•T programme: 120 °C to 200 °C at 20 °C min<sup>-1</sup>, (2 min), 200 °C to 280 °C at 10 °C min<sup>-1</sup> (5 min), 280 °C to 310 °C at : 20 °C min<sup>-1</sup> (10 min). Post run: 325 °C for 0.5 min

### Fragments and retention times

Compound	Retention time	Fragments (m/z)
BPA	16.32	441, 456, 249
BPAF	14.10	225, 315, 357
BPAP	22.23	518, 503, 269
BPB	17.29	441, 221, 470
BPC	17.57	469, 484, 263
BPE	16.01	427, 442, 235
BPF	15.81	179, 428, 221
BPS	22.19	478, 229, 379
BPZ	21.07	247, 259, 496
DHBP	15.33	105, 385, 427
BPP	11.24	325, 367, 544
dBPA (int. std)	16.24	441

### FURTHER WORK

Analytical method will be applied to a series of honey samples on the market (Slovene and imported) for screening of the target compounds.

