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## Background and Importance

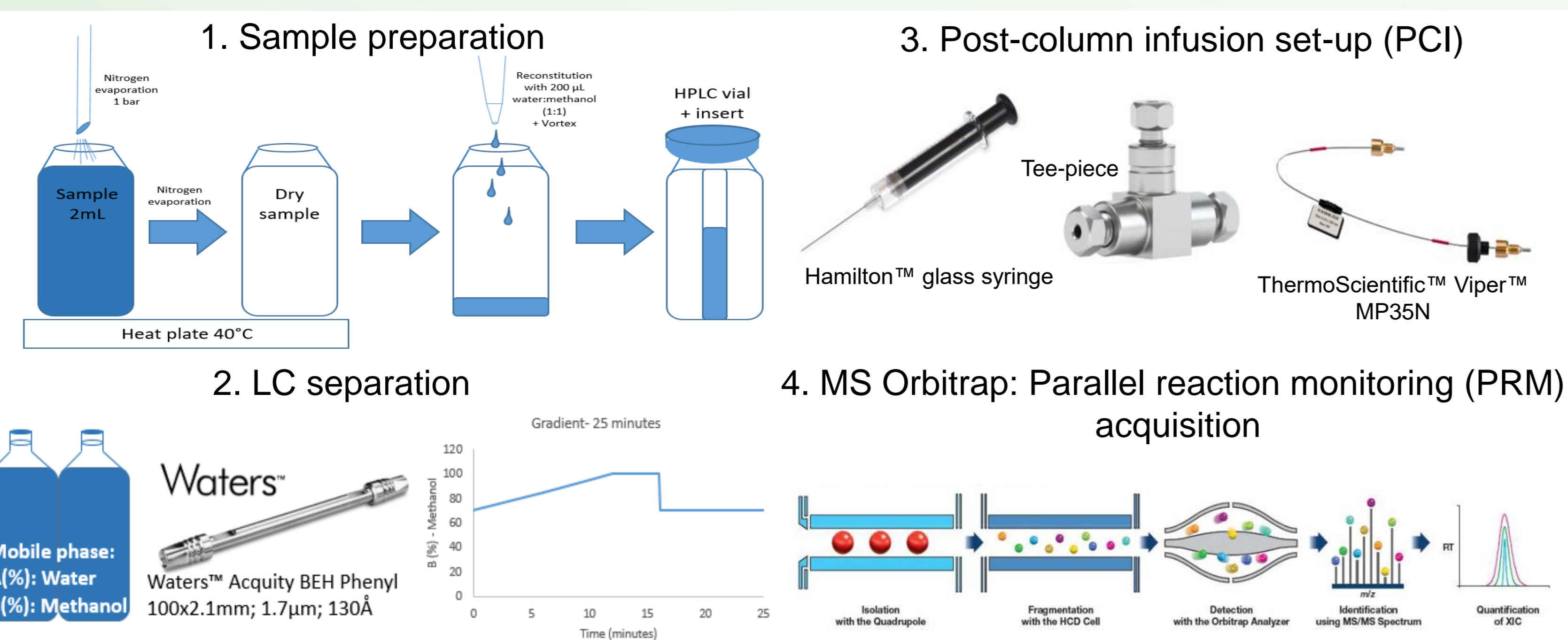
- **Prefilled aqueous solutions** like WFI in polymer containers:
  - ⇒ Co-extruded polypropylene IV bags (CEPP) and Polypropylene bottles (PP)
- Water for injection (WFI) is used for the decentralised or centralised preparations e.g. Total parenteral nutrition
- **Use of packaged WFI = Potential leachable plastic additives over time**
  - ⇒ Potential endocrine disruptors compounds (EDC) leading to probable latent health effects
- **Hospital pharmacy produced water for injection = alternative to packaged WFI**

## Objectives

A comparative study to evaluate the leachable profile of the following packaging:

1. Industrial water for injection (I-WFI) contained in CEPP IV bags Pre-autoclaving **versus** post-autoclaving
2. Industrial water for injection (I-WFI) contained in PP bottles
3. Hospital pharmacy produced water for injection (HPP-WFI)

## Materials and Methods

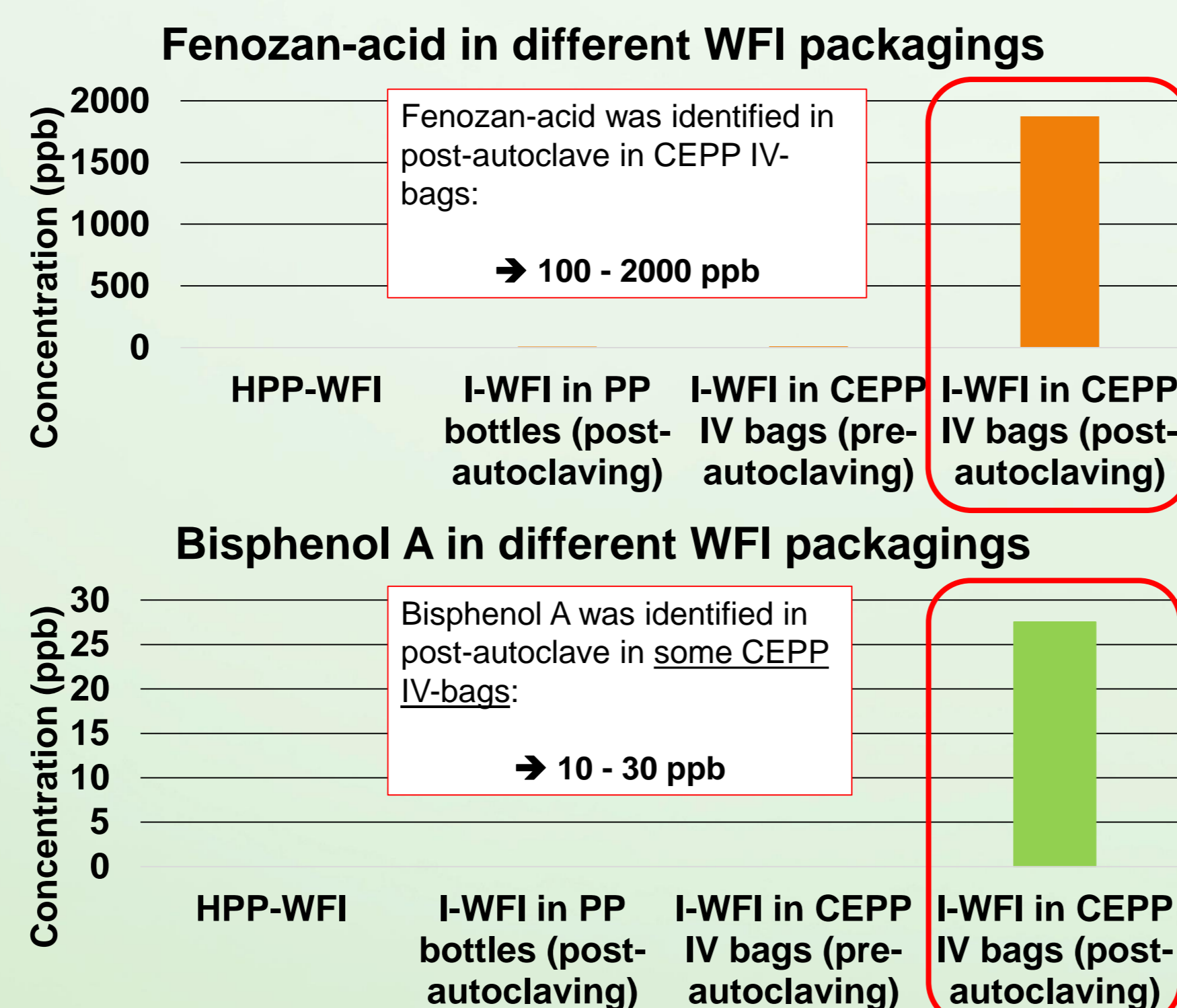


## Results

**3-(3,5-di-tert-butyl-4-hydroxy-phenyl)propanoic acid (i.e. Fenozan-acid) and Bisphenol A were identified in post-autoclaved CEPP IV-bag**

Table of Estimated concentrations of Fenozan-acid and Bisphenol A in different WFI packagings

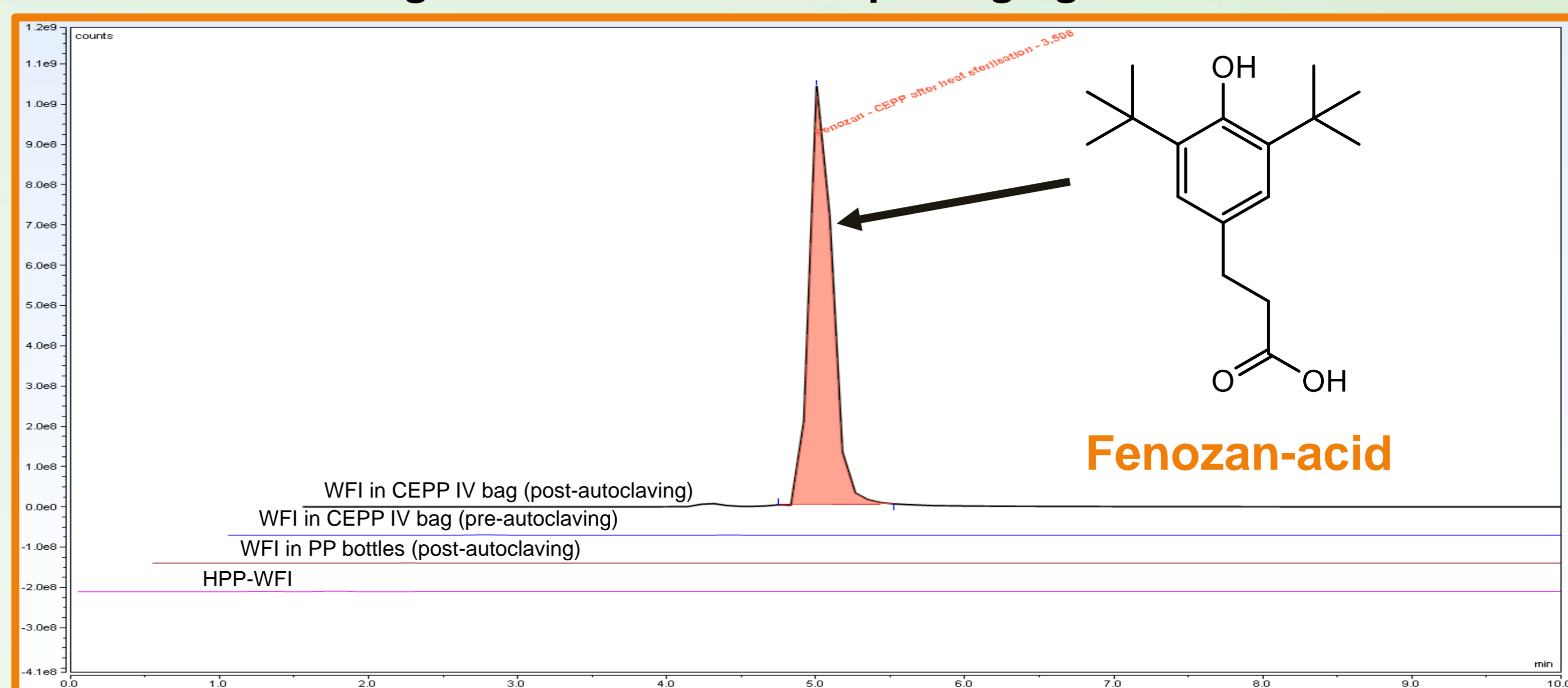
Different WFI packagings	Fenozan-acid Concentrations (ppb)	Bisphenol A Concentrations (ppb)
HPP-WFI	Not detectable	Not detectable
I-WFI in PP bottles (post-autoclaving)	1-10	Not detectable
I-WFI in CEPP IV bag (pre-autoclaving)	1-10	Not detectable
I-WFI in CEPP IV bag (post-autoclaving)	100-2000	10-30



## Conclusion and Relevance

- Means of sterilisation is an important factor: ~200 times more Fenozan-acid in CEPP IV-bag in post-autoclave
- Bisphenol A is a **non-intentionally added substance** and appears in some CEPP IV-bag in post-autoclave.
- **HPP-WFI seems to be exempt of these compounds**
  - ⇒ Ideal for hospital pharmacy compounding
- Due to the lack of toxicology information, more studies are required for ED assessment of this BHT derivative

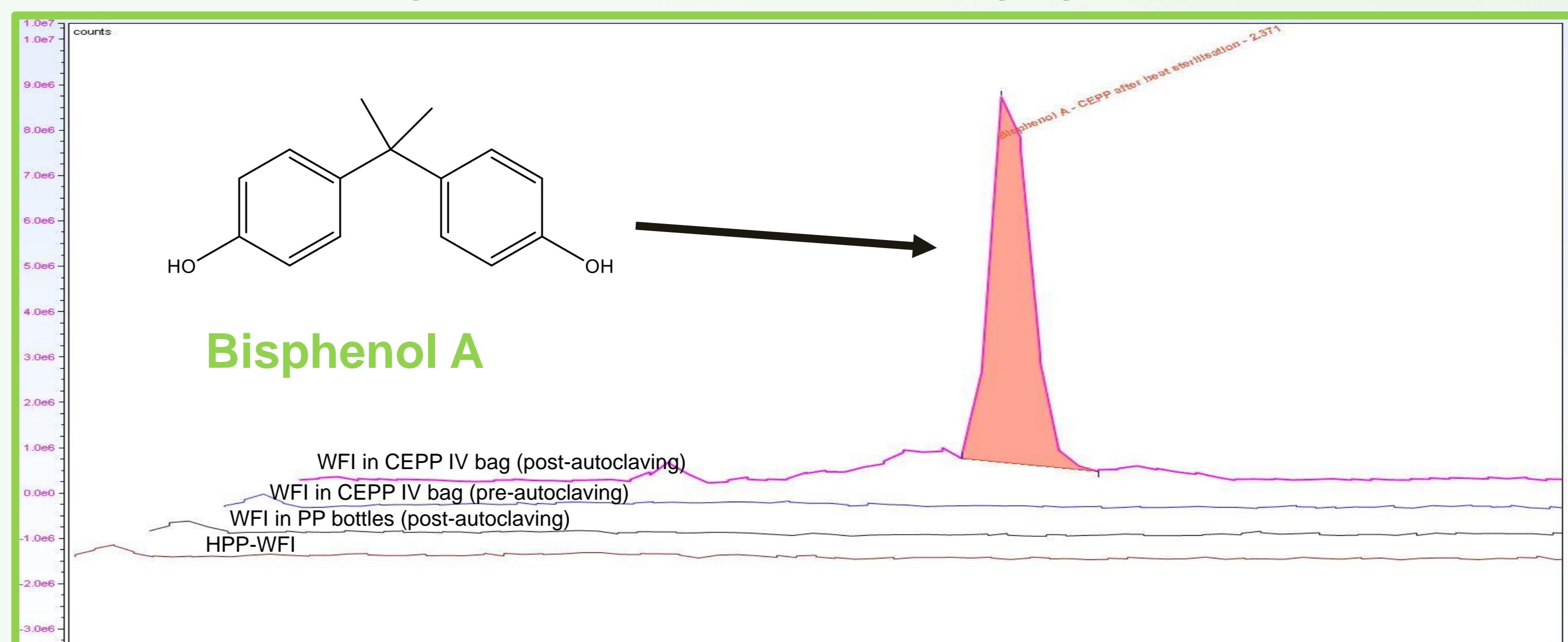
### Overlaid chromatograms of different WFI packagings : Fenozan-acid



### Mass spectrum of Fenozan-acid

277.18066 m/z (observed) vs 277.18092 m/z (theory)  
Δ mass error = < 1 ppm

### Overlaid chromatograms of different WFI packagings : Bisphenol A



### Mass spectrum of Bisphenol A

227.10709 m/z (observed) vs 227.10775 m/z (theory)  
Δ mass error = < 3 ppm

### Hydrolysis of ester bonds of complex antioxidants into Fenozan-acid

