

**Identification and quantification of preservative chemicals in common household products**

**Procedure for the extraction of parabens from cosmetic products for GC analysis**

Note: You will need to use authentic standards for the identification of the parabens and an internal standard for their quantification. You will also need a procedural blank in order to calculate the recoveries of each paraben.

**Step 1 Product**

- Weigh 0.25g (approximate mass, but accurately known) of your chosen product into a 100 mL glass beaker

**Step 2 Standards**

- Prepare solutions of paraben standards ( $0.1 \text{ mg mL}^{-1}$ ) in ethyl acetate
- Prepare a solution of the internal standard ( $0.1 \text{ mg mL}^{-1}$ ) in ethyl acetate
- Transfer 100  $\mu\text{g}$  of each paraben standard to a 100 mL glass beaker
- Add 100  $\mu\text{g}$  of your internal standard to your product to be analysed

**Step 3 Extraction**

To each of the 2 beakers:

- Transfer the mixture to a 250 mL separating funnel with 20 mL of water
- Repeat (a) 3 times and a final time with 40 mL of ethyl acetate
- Shake the mixture and leave it to stand for a few minutes until you observe 2 well separated phases
- Transfer the organic layer to a 250 mL round bottomed flask
- Add a further 40 mL of ethyl acetate to the funnel and repeat (c) and (d)
- Repeat (e) with 40 mL of hexane

**Step 4 Purification**

For each of your extracts:

- Place a small plug of cotton wool and silica (ca. 0.5 g) into a Pasteur pipette
- Rinse the silica column using 5 mL of hexane
- Dissolve your extracts using 2 mL of hexane and transfer to the column
- Run a further 5 mL of hexane through the column and discard it
- Elute the parabens using 5 mL of 90/10 hexane/ethyl acetate and collect in a 7 mL glass vial (Carefully record the weight of the vial to 5 decimal figures)
- Evaporate the solvent and record the weight of the purified extract

**Step 5 Analysis**

Store your purified extracts in a freezer until the following session

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