

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

Step 3 Extraction

To each of the 2 beakers:

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