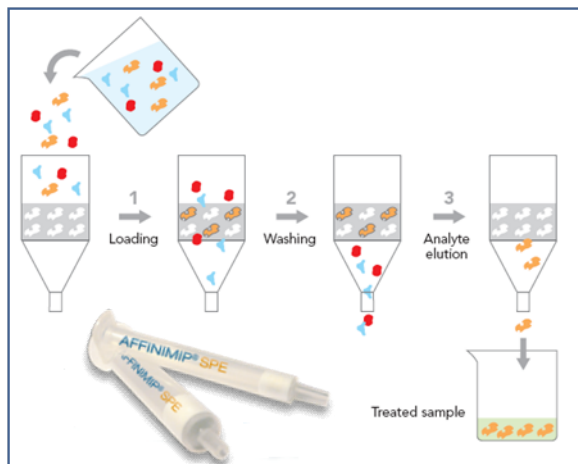


Selective Solid Phase Extraction of Parabens from Cosmetic products using AFFINIMIP® SPE Phenolics



Background

Parabens (see figure 1) are a class of chemicals widely used as preservatives by cosmetic and pharmaceutical industries.

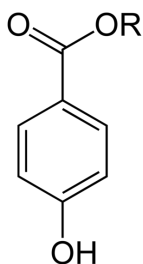


Figure 1. General structure of parabens. R= alkyl group.

These compounds, and their salts, are used for their bactericidal and fungicidal properties. It has also been identified as an Endocrine Disrupting Compounds which Estrogens activities.

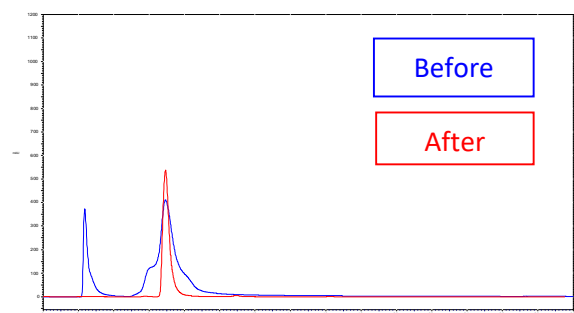
So, member countries of the European Union have set maximum allowable levels of parabens in ready for use preparations (Directive 1223/2009/EU of 30 November 2009): 0.4% for single parabens and 0.8% for a mixture.

This application note describes the analysis of different concentration of methylparaben in cosmetic product using AFFINIMIP® SPE Phenolics cartridge.

Results

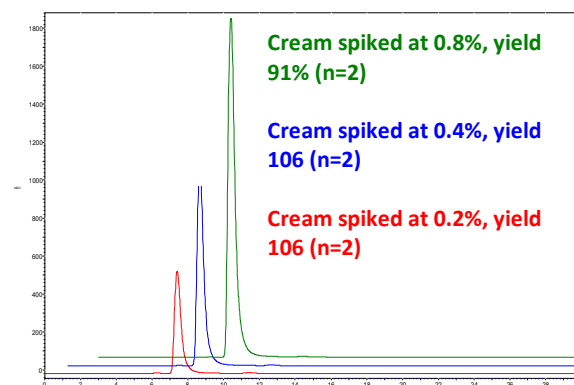
Perfect cleanup

Chromatograms of a cream containing 0.2% of methylparaben before clean-up (blue) and after clean-up (Red) with AFFINIMIP® SPE Phenolics



High capacity and recovery yields

Chromatograms obtained after clean-up with AFFINIMIP® SPE Phenolics of a cream (without parabens) spiked with different concentrations of methylparaben



Good reproducibility

Recoveries % (n=6)	RSD _R %
101.1	8

Experimental conditions

Preparation of the loading solution

1g of Lotion was mixed 1minute with 1mL of H₂SO₄ 2M and 50mL of 90/10 Ethanol/Water. The mixture was heated during 5min at 60°C. Then the solution is filtered on filter paper (4-7µm). This extract was diluted by 3 with water. The solution was spiked with methylparaben to simulate a concentration of paraben in the lotion at 0.2%, 0.4% and 0.8%.

Solid phase extraction (SPE) protocol

The SPE procedure used a 3mL AFFINIMIP® SPE Phenolics cartridge. The details of each step are as follow:

- Condition the SPE cartridge with 3mL of Acetonitrile (ACN), then with 3mL of deionized Water
- Load up to 5mL of the loading solution
- Wash the cartridge with 3mL of deionized Water /Acetonitrile (75/25, v/v)
- Elute Parabens with 3mL of Methanol

The elution fraction was diluted by 2 with water prior to analysis.

Analysis

HPLC was performed on a ThermoFinnigan Spectra System with a Thermo Hypersil Gold column (150mm x 2.1mm). Separation was carried out using a flow rate of 0.2mL/min and a mobile phase composed of 60/40 (v/v) Water/MeOH. The detection system was a ThermoFinnigan Spectra System Model UV6000LP set to 254nm. The injection volume was 20µL.

Product references

- **AFFINIMIP® SPE Phenolics**
 - FS103-02 for 25 polypropylene cartridges 3mL
 - FS103-03 for 50 polypropylene cartridges 3mL