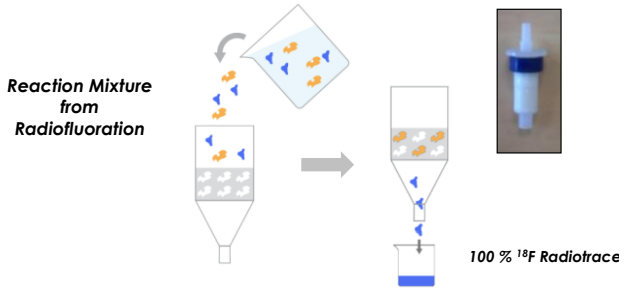
Selective Solid Phase Extraction for purification of Fluorous Radiotracer issued from an Aromatic Nucleophilic Substitution using Molecularly Imprinted Polymers



A mixture of Ethyl 4-hydroxybenzoate (99 µg), Ethyl 4-dimethylaminobenzoate (928 µg), Ethyl 4-fluorobenzoate (10 µg) and Ethyl 4-trimethylammoniumbenzoate iodide (102 µg) in 80-20 Water-Acetonitrile (5 mL) is prepared as the loading solution.

Solid phase extraction (SPE) protocol

The SPE procedure used a AFFINIMIP® SPE ^{18}F Aromatic Nucleophilic Substitution Cartridge. The details of each step are as follows:

- Condition the SPE Cartridge with 5mL of Acetonitrile (ACN)
- Load 5mL of the loading solution (L)
- Wash the cartridge with 5mL of 80-20 Water-ACN
- Dry the cartridge. **Force the water down into the cartridge and out the bottom or apply vacuum 30 seconds**
- Elute Ethyl 4-fluorobenzoate with 3mL of ACN (E1)
- An extra elution of 1 mL until dryness (E2)

The flow has to be as slow as possible so as to favour the interactions between the phase and the different compounds.

Analysis

HPLC was performed on a ThermoFinnigan Spectra System with an Hypersil Gold column 50mm x 2.1mm, 1.9 µm (Thermo). The separation was carried out using a gradient (see Table 1) at a flow rate of 0.2mL/min.

Table 1. Gradient used for the analysis.

Time (min)	% Water	% ACN
0	100	0
3	100	0
15	70	30
32	70	30
33	100	0
43	100	0

The detection system was a ThermoFinnigan Spectra System Model UV6000LP set to 235nm. The injection volume was 10µL.

Results

Recovery of more than 95 % of the fluorous radiotracer was obtained without any contamination of the other compounds.

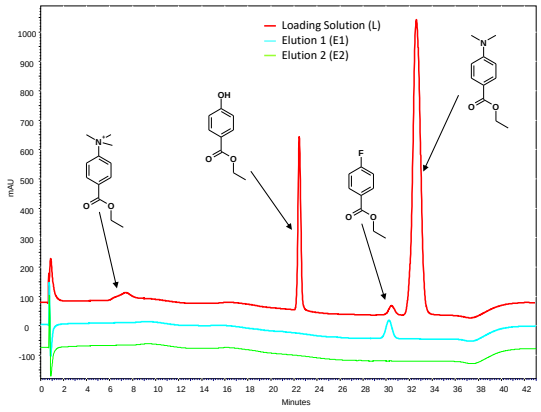


Figure 1. Chromatograms obtained before (red) and after (E1 : blue, E2 : green) AFFINIMIP® SPE ^{18}F Aromatic Nucleophilic Substitution Clean-up

Conclusion

The use of an AFFINIMIP® SPE ^{18}F Aromatic Nucleophilic Substitution cartridge is a simple, fast, and selective tool for the purification of reaction mixture issued from radiofluoration.

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