



## Extraction of Polycyclic Aromatic Hydrocarbons from Fish Using the QuEChERS Approach

### UCT Products:

**ECMSSC50CT-MP** (4000 mg mag. Sulfate, 1000 mg sodium chloride)

**ECMPSC1815CT** (900 mg MgSO<sub>4</sub>, 300 mg PSA and 150 mg endcapped C18)

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The QuEChERS approach is used for the extraction of 16 PAH compounds from fish with analysis by LC with fluorescence detection.

### 1) Extraction: Protect samples from exposure to light to avoid degradation

- a) 5 grams of homogenized fish are transferred to a 50 mL centrifuge tube
- b) Add 10 mL of acetonitrile
- c) Mix by shaking
- d) Add the contents of **ECMSSC50CT-MP** pouch containing 4 grams MgSO<sub>4</sub> and 1 gram of NaCl to the centrifuge tube
- e) Immediately vortex the mixture for 3 minutes
- f) Centrifuge samples for 3 minutes at 3400 rpm
- g) Recover the clear supernatant for cleanup

### 2) Clean-up, Dispersive Solid-phase (dSPE)

- a. Use 3 mL of the supernatant for clean-up
- b. Add supernatant to centrifuge tube **ECMPSC1815CT**
- c. Shake for 1 minute
- d. Centrifuge for 1 minute at 3400 rpm
- e. Filter supernatant through 0.20 µm PTFE membrane filter
- f. Samples are ready for analysis

### 3) Analysis Conditions

- a. Separation of the compounds is performed in a C18 column (CC 150/4 Nucleosil 100-5 C18 PAH, 150 x 4.0 mm; 5 µm particle size; Macherey-Nagel, Duren, Germany) or equivalent maintained at room temperature
- b. Inject 15 µL
- c. The initial composition of the mobile phase is 50% of ACN and 50% water
- d. A linear gradient to 100% is programmed in 15 minutes
- e. Final hold 13 minutes
- f. Initial conditions are achieved within 1 minute and maintained for 6 min before next run.
- g. Total run time is 40 minutes
- h. Flow rate of 0.8 mL/minute
- i. **Fluorescence wavelength program:**

Each compound is detected at its optimum excitation/emission wavelength pair:

**315/260 nm** naphthalene, acenaphthene and fluorene

**366/260 nm** Phenanthrene

**430/260 nm** anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, benzo(g,h,i)perylene and dibenzo(a,l)pyrene

**505/290 nm** (indeno(1,2,3-cd)pyrene)

\*Adapted from, Ramalhosa, Maria Joao et al, "Analysis of polycyclic aromatic hydrocarbons in fish: evaluation of a quick, easy, cheap, effective, rugged, and safe extraction method", J. Sep. Sci. 2009, 32, 3529 – 3538