Microlute™ SLE

Protocol: The Quicker and Easier LLE

Microlute™ SLE is a quick and easy method of analyte extraction using an immobilised support material for water immiscible solvent-based extraction methods.

Sample Preparation

1. Sample Pre-Treatment

(a) Dilute sample 1:1 with a pH adjusting solution (see guidelines below).

2. Loading

(b) Load up to 200 µL of diluted sample into well(s).

- Apply positive pressure (3 psi) or vacuum (-0.2 bar) for ~5 seconds to load sample onto the plate.

(c) Wait 5 minutes to allow the sample to fully absorb onto the SLE plate media.

3. Elution

(d) Elute with water immiscible solvent under gravity.

- Suggested elution volume: 1 x 1 mL or 2 x 500 L of solvent.
- Suggested elution solvents: DCM, MTBE, Ethyl Acetate, Hexane
- A polar modifier can be added to increase solubility of polar analytes eg. % 5 isopropyl alcohol (IPA)

(e) Apply positive pressure (10 psi) or vacuum (-0.2 bar) for 30 seconds for complete elution.

(f) Evaporate to dryness and reconstitute in a suitable solvent for analysis method.

Sample Pre-Treatment Guidelines

Purpose: Make analyte(s) of interest uncharged for greater solubility in solvent of choice.

A - Neutral compounds: H_2O
B - Acidic compounds: 2% Formic acid in H_2O
C - Basic compounds: 5% Ammonia in H_2O

Notes

- These pH adjusting solutions can be adjusted to be weaker/stronger depending on the pKa of the compound.
- Most compounds should be uncharged under those conditions.
- pH has no effect on truly neutral compounds. They should extract over the range of pHs.
- Choice of elution solvent is most important with neutral compounds.
- Choose one which is water immiscible and the analyte of interest is soluble in.

Acidic Analytes

pH	% uncharged analyte	% dissociated analyte
2.0	99.5	0.5
3.0	95	5.0
Analyte pKa = 4.0	50	50
5.0	5.0	95

Basic Analytes

pH	% uncharged analyte	% dissociated analyte
2.0	99.5	0.5
3.0	95	5.0
Analyte pKa = 4.0	50	50
5.0	5.0	95

Table 1. Recommended pH adjusting solution for acidic and basic analytes using the 2 pH Unit Rule

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