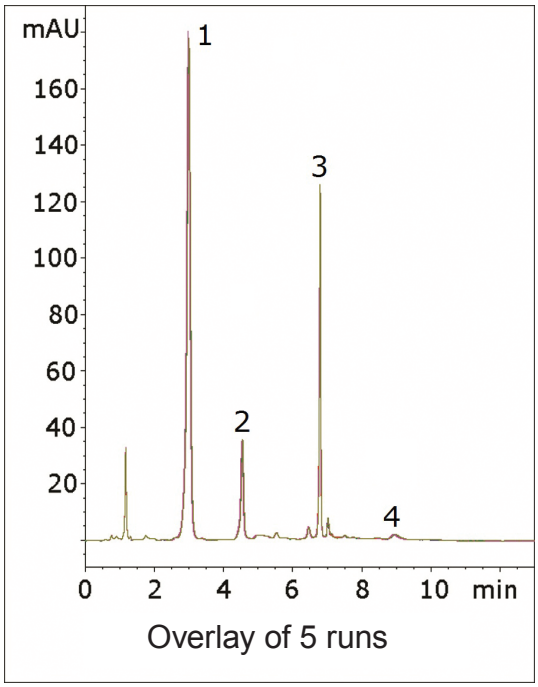
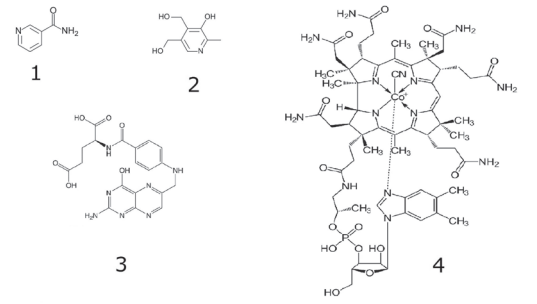
B-Vitamin Tablet Analysis

Separation of hydrophilic vitamins in a formulation





Note: The word "vitamin" was originally spelled "vitamine" when it was first coined by biochemist Casimir Funk. It was derived from the words "vital" and "amine" because it was believed at the time that all vitamins were chemical amines. The "e" was dropped from the word when it was discovered that this is not the case.

Method Conditions

Column: **Cogent Diamond Hydride™**, 4µm, 100Å

Catalog No.: 70000-7.5P

Dimensions: 4.6 x 75 mm

Mobile Phase: A: DI H_2O / 10 mM ammonium formate
B: 95% acetonitrile / 5% solvent A (v/v)

Gradient:

time (min.)	%B
0	100
2	100
9	50
10	100

Post time: 3 min

Injection vol.: 1µL

Flow rate: 1.0 mL/min

Detection: UV 266 nm

Samples: The vitamin tablet was ground and dissolved in 25 mL of 50% 10 mM ammonium formate / 50% acetonitrile / 0.1% v/v 1N NaOH diluent. Solution was sonicated 10 min and filtered through 0.45µm nylon syringe filter (MicroSolv Tech Corp.). Peak identities were confirmed by individual standards.

Peaks: 1. Niacinamide
2. Pyridoxine
3. Folic Acid
4. Cyanocobalamin

t_0: 1.0 min

Discussion

This method illustrates the separation of four hydrophilic vitamins which were extracted from a tablet formulation using the Cogent Diamond Hydride column. A small commercial amount of 1N NaOH was added to the sample diluent to help extract folic acid. The data shows the vitamins can be separated from other matrix peaks in a real life formulation.

The main advantage of this method over typical reversed phase HPLC analyses for vitamins is that ion pair agents are not needed. Therefore, the method can be used for LC-MS applications. Furthermore, the method precision is excellent, as the overlay of 5 runs in the figure shows.

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