Coenzyme Q10 analyzed with HPLC – AppNote

Coenzyme Q10 concentration determination in dietary supplements

A rapid, sensitive, and reproducible method has been developed for this biologically active compound from the quinone family. Coenzyme Q10 (CoQ10) is highly lipophilic and water insoluble and can be difficult to solubilize. The data below, (*overlaid chromatogram of 6 consecutive injections*) illustrates how the compound can be adequately retained and detected using this straightforward method.

A calibration curve *(correlation 0.9999, n=6, Rt's %RSD=0.2)* was created and it allowed for the determination of the concentration of CoQ10 in softgel capsules to be 184 to 252 mg with the value declared by the manufacturer being 200mg per capsule. The method only takes 10 minutes per sample and may be suitable for the determination of CoQ10 in raw materials, supplements, and human plasma.

Peak:

Coenzyme Q10

Method Conditions

Column: Cogent Phenyl Hydride™, 4µm, 100Å

Catalog No.: **69020-10P**

Dimensions: 4.6mm x 100mm

Mobile Phase:

A: DI water with 0.1% formic acid (v/v).

B: Acetonitrile.

time *(minutes)*	%B
0	70
2	70
4	100
6	100
8	75

Injection vol.: 5µL

Flow rate: 1.0mL / minute

Detection: UV @ 275nm

Sample Preparation: Content of the capsules was transferred quantitatively to 100 mL volumetric flask and dissolved in acetonitrile / tetrahydrofuran 1:1 mixture. The solvent was added to the mark on the volumetric flask. Expected concentration 2 mg/mL. Next samples were diluted to obtain 1 mg/mL solutions.

Standard: 1 mg of CoQ10 standard was dissolved in acetonitrile / tetrahydrofuran 1:1.

%RSD: <0.1%

t_0: 1.4 Minutes

K': 3.4

Notes: Coenzyme Q10 is an important part of the electron transport chain in human body. Benefits of coQ10 include prevention of lipoprotein oxidation, antihypertensive, migraine treatment, Parkinson's Disease and cardiovascular disease applications. There are no toxic effects known.

Note 2: Capacity is determined using the following equation: $k = (t_R-t_0)/t_O$

- *t_R = Retention time of an analyte peak*
- *t_O = Retention time of non-rtetained peak*

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MicroSolv Technology Corporation
9158 Industrial Blvd. NE, Leland, NC 28451
tel. (732) 380-8900, fax (910) 769-9435
Email: customers@mtc-usa.com
Website: www.mtc-usa.com
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