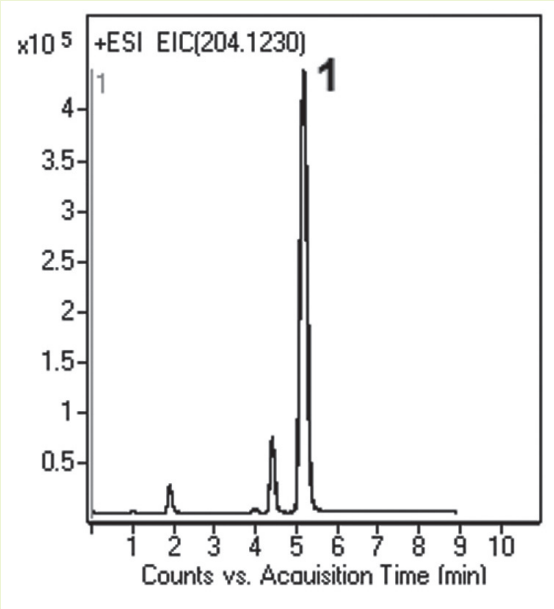
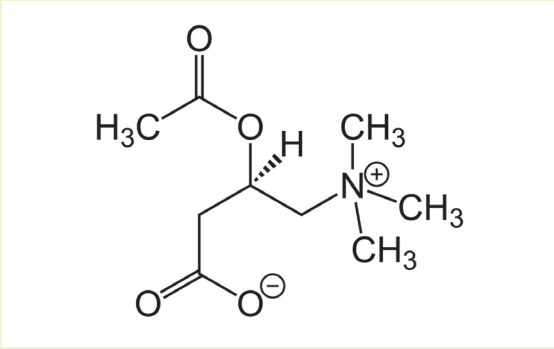
Acetyl-L-Carnitine (ALC) in Plasma

Excellent LC-MS method in spiked plasma sample





Note: ALC is used to improve mitochondrial function. Recently ALC was proposed as an effective drug to be supplement in peripheral arterial disease. There is a need to study and fully understand the pharmacokinetics of administered ALC.

Method Conditions

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

Catalog No.: 70000-15P-2

Dimensions: 2.1 x 150 mm

Mobile Phase: A: DI H_2O / 0.1% formic acid
B: Acetonitrile / 0.1% formic acid

Gradient:

time (min.)	%B
0	80
1	80
5	30
7	30
8	80

Post Time: 3 min

Injection vol.: 1µL

Flow rate: 0.4 mL/min

Detection: ESI – POS - Agilent 6210 MSD TOF mass spectrometer

Sample: Plasma from healthy individuals was spiked with an ALC standard solution and prepared for injections as described by Tallarico *et al.* [1]. To prepare standard curves dialysed plasma was used, to which known amounts of the analyte were added.

Peak: 1. Acetyl-L-carnitine: 204.1230 m/z $[M+H]^+$, 3 overlaid injections

t_0: 0.9 min

Discussion

The method presented in this application note was designed to be suitable for the routine analysis of plasma samples obtained from animal and human pharmacokinetics studies in which ALC is administered. The calibration curve prepared in plasma samples showed good linearity (R^2 = 0.999). The precision of the method was demonstrated by low %RSD (0.2 and below). The advantages over other published LC-MS methods are the short equilibration time between runs for gradient runs and excellent repeatability. Also, the method uses high organic content in the mobile phase, which is more suitable for MS.

[1] Carlo Tallarico, Silvia Pace, and Antonio Longo, Rapid Communications in Mass Spectrometry, Vol. 12, 403–409 (1998).

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