



# NSK-B – Free Carnitine and Acylcarnitine Reference Standards

This set contains ten vials of a dry mixture of eight isotopically labeled free carnitine and acylcarnitines. Accurate and complete reconstitution of the contents of one vial in 1 ml of high purity solvent will produce the concentrations presented in the **Standards Concentrations** table. Mix well. This solution becomes the concentrated acylcarnitine stock standard.

## Dilution of Reference Standards Concentrated Working Stock

To prepare working stock solutions, one of the following procedures is suggested: dilute 1 ml (reconstituted vial contents per instructions above) of the concentrated acylcarnitine stock standard with pure solvent. If Set A (Amino Acid Reference Standards) was purchased, mix 1 ml (vial contents) of concentrated standards from Set A with 1 ml of the concentrated standards from Set B. Store the diluted standards in a tightly sealed vial at 4°C. In order to maintain the integrity of the solution, we recommend storing the sealed vials in a second sealed container. We recommend discarding this concentrated working stock solution after ~1 month. Stability data is being obtained.

## Daily Working Stock

Dilute the concentrated working stock 1:100 v/v with solvent. The concentrations of carnitine and acylcarnitine daily working stock is presented in the **Daily Working Standards Concentrations** table. Prepare the daily working stock as needed each day. Discard this mixture weekly and refrigerate at 4°C when not in use. Please note daily working stock serves as both the extraction solvent and the means for internal standardization of the analysis. Extreme care should be taken in storage and dilution of standards as well as sample preparation.

Standards Concentrations	
Reference Standard	Concentration (nmol/mL)
<sup>2</sup> H <sub>9</sub> -Carnitine (free carnitine, CN)	152.0
<sup>2</sup> H <sub>3</sub> -Acetylcarnitine (C2)	38.0
<sup>2</sup> H <sub>3</sub> -Propionylcarnitine (C3)	7.6
<sup>2</sup> H <sub>3</sub> -Butyrylcarnitine (C4)	7.6
<sup>2</sup> H <sub>9</sub> -Isovalerylcarnitine (C5)	7.6
<sup>2</sup> H <sub>3</sub> -Octanoylcarnitine (C8)	7.6
<sup>2</sup> H <sub>9</sub> -Myristoylcarnitine (C14)	7.6
<sup>2</sup> H <sub>3</sub> -Palmitoylcarnitine (C16)	15.2

Daily Working Standards Concentrations for Set A & Set B mix	
Reference Standard	Concentration (nmol/mL)
<sup>2</sup> H <sub>9</sub> -Carnitine (free carnitine, CN)	0.76
<sup>2</sup> H <sub>3</sub> -Acetylcarnitine (C2)	0.19
<sup>2</sup> H <sub>3</sub> -Propionylcarnitine (C3)	0.04
<sup>2</sup> H <sub>3</sub> -Butyrylcarnitine (C4)	0.04
<sup>2</sup> H <sub>9</sub> -Isovalerylcarnitine (C5)	0.04
<sup>2</sup> H <sub>3</sub> -Octanoylcarnitine (C8)	0.04
<sup>2</sup> H <sub>9</sub> -Myristoylcarnitine (C14)	0.04
<sup>2</sup> H <sub>3</sub> -Palmitoylcarnitine (C16)	0.08