

POSTER PRESENTATION ABSTRACT

ACOS24-P-002: Amplifying the Antioxidant Efficacy of Coenzyme Q10 Through a Novel Dual-Lipid Delivery System

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Free radicals, generated as byproducts of cellular metabolism or through exposure to environmental stressors, pose a significant risk to cellular integrity by inducing oxidative stress. Oxidative stress has been implicated in the pathogenesis of numerous diseases, including cardiovascular disorders, neurodegenerative conditions, and inflammatory processes. Coenzyme Q10 (CoQ10), an endogenous lipid-soluble antioxidant, plays a crucial role in mitochondrial electron transport and serves as a potent scavenger of free radicals. However, its therapeutic potential is hindered by limited bioavailability. The limited bioavailability of CoQ10 poses a significant challenge in harnessing its potential health benefits, particularly in addressing heart diseases. Current formulations struggle with efficient absorption of this highly hydrophobic molecule, impacting its effectiveness. Additionally, the prevalent use of synthetic solvents in formulations contradicts the growing consumer demand for natural products. To address these issues, this study aims to develop a novel dual lipid delivery system of CoQ10 supplement utilizing virgin olive oil and virgin coconut oil as natural lipid carriers. This study explores a novel approach to amplify the antioxidant potential of CoQ10 by utilizing a dual-lipid delivery system as well as its stability. The antioxidant efficacy of the dual-lipid delivery system of CoQ10 was evaluated through 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay. The antioxidant assays revealed a significant twofold improvement in scavenging DPPH radicals compared to single lipid CoQ10 formulations. The inclusion of dual lipids also improves the protection of antioxidant activities from thermal degradation (increase by 12.8% at 60°C) and light degradation (increase by 1.93% at room temperature). This study presents a promising strategy to enhance the antioxidant efficacy of CoQ10 through a dual-lipid delivery system.

Keywords: Coenzyme Q10, Antioxidant, Dual-lipid delivery system