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Editorial Note

Pharmacological Regimen of Coenzyme Q10

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The coenzyme Q-10 is possessing antioxidant property, high degree of hydrophobicity and occurrence in biological system, it plays an important role in cellular defense against oxidative damage. The coenzyme Q-10 is mainly present in brain, kidney, heart and liver and it is indicated in the treatment of cardiovascular disease, neurodegenerative disorders, cancer, diabetes mellitus, aging, alzheimer disease and kidney disease.

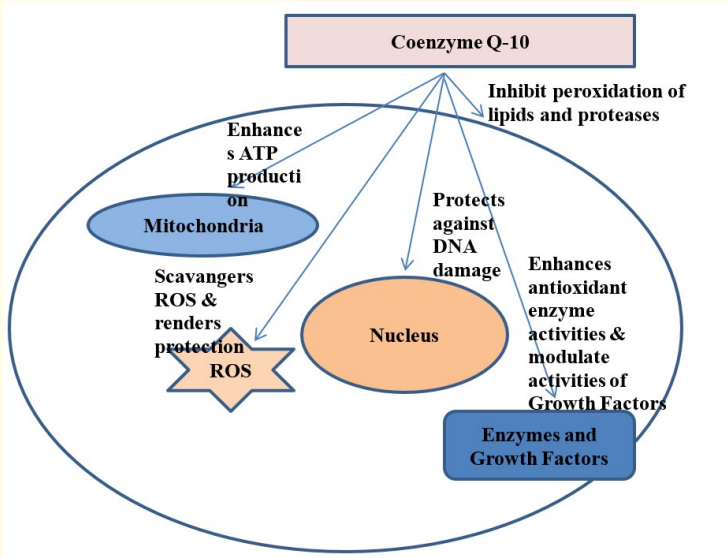

Figure 1: Mechanism of action of Coenzyme Q10.

Coenzyme Q-10 is a fat soluble vitamin like quinone commonly known as ubiquinone, CoQ, Vit Q 10. It is used in the treatment of a variety of disorders primarily related to suboptimal cellular energy metabolism and oxidative injury [1, 2]. Coenzyme Q-10 or ubiquinone is ubiquitous in nature and is widely distributed in plants, animals and micro-organisms. Coenzyme Q 10 was first isolated in 1957 in beef mitochondria and is found in highest concentrations in tissues with high energy turn over such heart, brain, liver and kidney [3, 4]. The primary role of coenzyme Q-10 is to facilitate the electron transfer between redox components of electron transport chain in order to create a proton gradient across the inner mitochondrial membrane thereby facilitating the ATP formation [5]. Additional biological functions maintenance of membrane fluidity, recycling of radicals forms of vitamin C and E [6, 7]. It is most importantly antioxidant protection against membrane lipid peroxidation [8]. It is the only endogenously occurring lipid soluble antioxidant among all the coenzymes ubiquitously synthesized [9, 10].

Coenzyme Q -10 also appears to increase adenosine triposphate levels by preventing the loss of adenine nucleotide pool from cardiac cells [11]. Additionally, coenzyme Q-10 has demonstrated activity in preventing lipid peroxidation as an antioxidant scavenger and an indirect stabilizer of calcium channels to decrease calcium overload [12, 13]. Coenzyme Q-10 has been cleared for the treatment of congestive heart faiuure. (CHF)These levels appear to correlate with CHF severity in the animal and human model, with coenzyme Q-10 supplementation protecting against ischemia and reperfusion injury in animal studies [14, 15] CoQ 10 affects the function of all cells in the body, making it essential for the health of all tissues and organs. CoQ 10 also functions as an intracellular antioxidant at the mitochondrial level, perhaps accounting for its benefit in neurodegenerative disease, male infertility, periodonatal disease, cardiovascular disease, diabetes mellitus, cancer, asthma, renal failure, migraine and immune [9] fenofibrate is a PPAR-α agonist,it increases the expression of lipolytic enzymes and reduces oxidative stress and lipid accumulation thus inhibit the development of albuminuria and glomerular fibrosis [16] (Tanaka Yet al, 2011).

CoQ10 decreases the oxLDL mediated down-regulation of eNOS and up-regulation of iNOS [17] (Tsai KL et al, 2011).

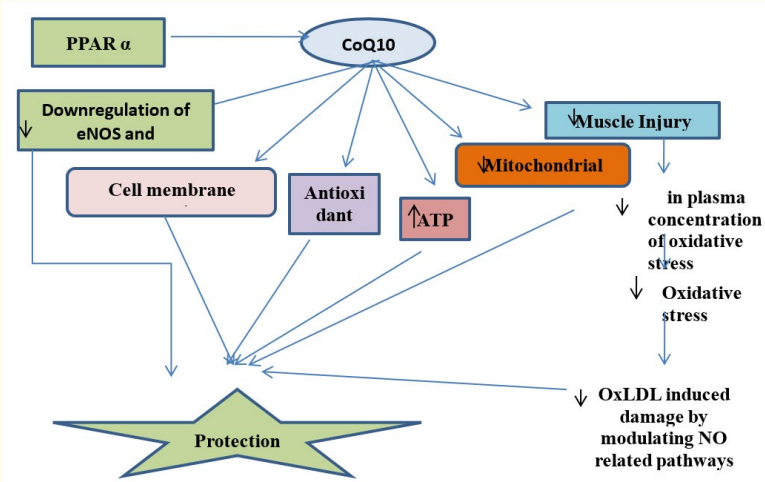

Figure 2: Mechanism by which Coenzyme Q10 acts on Kidney.

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