Agriculture and Food – current and future challenges AGRIFA

COENZYME Q_{10}: HEALTH BENEFITS AND BIOAVAILABILITY

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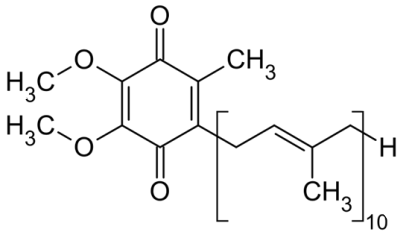
1. Abstract

Coenzyme Q_{10}, is a lipophilic metabolite present in nearly all human tissues, being involved in the electron transport chain in the plasma membranes of prokaryotes and in the inner mitochondrial membranes of eukaryotes. This coenzyme participates in aerobic cellular respiration, which generates energy in the form of ATP (95% of the energy of the human body is generated in this way). Therefore, the organs with the highest energy requirements (heart, liver and kidneys) have the highest concentration of CoQ_{10}. After the age of 30-35, the organism loses the ability to synthesise CoQ_{10} from food and levels of coenzymes deplete in the skin resulting in a reduced production rate of collagen and elastin formation.



Chemical structure: Coenzyme Q_{10}

Aims: This review focused on the health benefits of CoQ_{10} dietary supplementation and its bioavailability for human body.

Main sources of Coenzyme Q_{10}

2. Design

1. Extraction - Coenzyme Q_{10} (from food-waste)
+
2. Purification- Coenzyme Q_{10}
+
3. Quantification - Coenzyme Q_{10}

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4. Nutritional Supplement based on Coezyme Q_{10} gelcaps

3. Results

Stress, infections, poor eating habits and ageing are only a few disorders which affect the organism`s ability to provide adequate amounts of CoQ10 . More than 200 clinical trials have investigated its use as a drug ordietary supplement and reported beneficial effects for human health.

4. Conclusions

The recovery of coenzyme Q_{10} from food-waste and supplementation will have an important impact:

- on the environment by reducing food waste
- on human health by restoring the coenzyme deposits in the body and treatment of certain diseases