

# CoQMulti™

## Product Description:

Each soft gelatin capsule contains

- |                |         |
|----------------|---------|
| • Coenzyme Q10 | 100mg   |
| • L-Arginine   | 100mg   |
| • L-Carnitine  | 100mg   |
| • Lycopene     | 5000mcg |
| • EPA          | 90mg    |
| • DHA          | 60mg    |
| • Selenium     | 12.5mcg |
| • Vitamin E    | 10 mg   |
| • Zinc         | 10 mg   |
| • Vitamin B1   | 10mg    |
| • Vitamin B2   | 10mg    |
| • Vitamin B12  | 125mcg  |
| • Vitamin B6   | 2mg     |

## General Information:

- Most patients with chronic kidney disease (CKD) have other diseases that cause CKD or contribute to the risk of cardiovascular events or death. Managing these comorbidities is a challenge. Diabetes, hypertension, cardiovascular disease, and anemia are more common in CKD patients than in individuals who do not have CKD, and the prevalence of these comorbidities increases as CKD progresses. **Most patients (86%) with advanced CKD have at least 1 comorbidity**

## Coenzyme Q10

Coenzyme Q-10 is a fat-soluble, vitamin-like compound that is naturally found in most tissue of the human body. It is essential for life and health of every living cell. The highest concentrations are found in the **heart, liver, kidney, and pancreas**. The human body produces coenzyme Q-10. Humans can replenish coenzyme Q10 from dietary sources, including meats and seafood. **Plasma concentrations of CoQ10 are depressed in patients with chronic kidney disease (CKD).**

Coenzyme Q10 primary function are as

- An antioxidant,

- Membrane stabilizer
- Production of adenosine triphosphate (ATP) in the oxidative respiration process.
- As an antioxidant and its role in ATP, coenzyme Q10 offers many therapeutic benefits. Also, coenzyme Q10 has been shown to help preserve myocardial sodium-potassium ATPase activity and stabilize myocardial calcium dependent ion channels.

#### Coenzyme Q10 roles in CKD Patients:

- CoQ10 treatment decreases superoxide production in endothelial cells and improves cardiac capacity in patients with heart failure.
- Long-term therapy with CoQ10 can reduce major adverse cardiovascular events, and is safe and well-tolerated by the general population.
- **Plasma concentrations of CoQ10 are depressed in patients with non-dialysis CKD, and in those undergoing dialysis.**
- **Depleting CoQ10 leads to inefficient electron transport and increased reactive oxygen species production.**
- CoQ10 supplementation may improve mitochondrial function and decrease oxidative stress in patients undergoing haemodialysis.

CoQ10 may have favourable effects on

- Cardiac function,
- Hypertension,
- Glucose metabolism,
- Lipid profiles,
- Inflammation and oxidative stress in patients with non-dialysis CKD and those undergoing dialysis,

#### L-Arginine

L-arginine is a semi essential amino acid and also a substrate for the synthesis of nitric oxide (NO). Most l-arginine produced in the kidney is released into the blood and distributed throughout the body.

- The kidneys synthesize about 2 g of l-arginine per day; normal dietary intake is approximately 4–5 g per day.
- **In patients with severe CKD or ESRD, who have little functional renal mass, production of l-arginine could be compromised (only 40% production)**
- Nitric oxide (NO) production is reduced in renal disease, partially due to decreased endothelial NO production.
- Nitric oxide (NO) deficiency contributes to cardiovascular events and progression of kidney damage.
- **L-Arginine increases nitric oxide(NO) production thereby improves endothelium dependent vasodilatation and improves Cardiovascular morbidity & mortality**

#### L-Carnitine:

L-carnitine, an amino acid-derived nutrient crucial to cellular energy management, may play a vital role in kidney disease prevention and management. Patients undergoing maintenance HD, usually present with plasma carnitine insufficiency, due

increased removal via HD. This may affect clinical consequences such as impaired muscle function, decreased wound healing and abnormal immune function.

LC supplementation: Clinical Benefits - Erythropoietin-resistant anemia, decreased cardiac performance, intradialytic hypotension, muscle symptoms, as well as impaired exercise and functional capacities

### **Eicosapentaenoic acid (EPA)**

Eicosapentaenoic acid (EPA), an omega-3 fatty acid produces beneficial effects on inflammatory and oxidative mechanisms involved in atherosclerotic plaque formation and progression. EPA therapy may potentially improve CV outcomes in the high-risk population of patients with ESRD on chronic hemodialysis

### **Docosahexaenoic acid (DHA)**

Omega-3 fatty acids significantly reduce the risk of ESRD and are associated with a lower risk of proteinuria.

### **Lycopene**

Lycopene is the most predominant carotenoid in plasma of human. Lycopene is a lipid-soluble antioxidant and has been inversely associated with lipid peroxidation, comprising low-density lipoprotein oxidation and reduced oxidative stress and inflammation.

### **Selenium**

Selenium is an essential trace element with known antioxidant properties. It acts as a cofactor for the reduction in important antioxidant enzymes like **glutathione peroxidase**. Selenium may be an effective complementary supplement for reducing the severity of malnutrition in HD patients through alleviating oxidative stress and inflammation.

### **Vitamin E**

Vitamin E proved its antioxidant effects in hemodialysis patients by

- Decreasing ROS synthesis and cellular damages,
- Reducing lipid peroxidation,
- Platelet aggregation and limiting atherosclerosis,
- Improving antioxidant defense and
- Ameliorating anemia treatment in hemodialysis patients.

### **Zinc**

Zinc supplementation benefits the nutritional status of Maintenance HD patients. It also leads to an anti-inflammatory and antioxidative effect in MHD patients.

### **Vitamin B1 (Thiamine)**

Vitamin B1 is a part of the coenzyme thiamine pyrophosphate that promotes the conversion of pyruvate to acetyl CoA. It is useful in many activities such as the conduction of nerve impulses, muscle function or stimulation of appetite.

### **Vitamin B2 (Riboflavin)**

Vitamin B2 is necessary for the release of energy from nutrients and supports normal vision and healthy skin. The RDA for riboflavin is 1.3 mg/d for adult males and 1.1 mg/d for adult females.

### **Pyridoxine (B6)**

Pyridoxine (B6) is a family of compounds that, unlike other water-soluble vitamins, can be stored in muscles. It is important for the metabolism of amino acids and fatty acids and influences cognitive development, immune function as well as steroid synthesis.

In dialysis patients, it has been shown that pyridoxine supplementation may correct the high levels of total cholesterol, triglyceride, and LDL and the low HDL. The RDA for vitamin B6 is 1.3 mg/d for adult males and females through age 50.

### **Vitamin B12 (Methylcobalamin)**

Methylcobalamin is a type of Vitamin B12. This vitamin is necessary for DNA and RNA syntheses. The RDA for vitamin B12 is 2.4 mcg/d for adult males and females, including the dialysis patients. There are studies showing impressive homocysteine reductions (from 11 to 30%) that may even include normalization of its serum levels in haemodialysis and peritoneal dialysis patients

### **Indication & Usage:**

CoQMulti is to be used in minimizing comorbid conditions in

- Chronic Kidney Disease Patients
- Dialysis Patients
- Patients with high risk of CVD Disease
- Type 2 diabetic patients
- In reducing muscle cramps during dialysis

### **Dosage and Administration:**

1-2 tablets per day

### **Mechanism of Action:**

Within the cell, coenzyme Q-10 is mostly present in the mitochondria (40-50%). It is the electron acceptor for the mitochondrial electron transport chain and plays an essential role in the production of energy in all cells. CoQ10 transports electrons from complexes 1 or 2 to complex 3 in mitochondria. CoQ10 provides essential nutrients that may benefit the heart

### **Contraindication:**

CoQMulti is contraindicated in patients with known hypersensitivity to any of the ingredients.

### **Drug Interaction:**

- There is some concern that antioxidants might decrease the effectiveness of some medications used for cancers. But it is too soon to know if the interaction occurs.
- Coenzyme Q-10 seems to decrease blood pressure. Taking coenzyme Q-10 along with medications for high blood pressure might cause your blood pressure to go too low

### **Use in Special Population:**

#### **Pregnancy**

Your doctor will determine the suitability and safety of the use of this medicine.

#### **Breast-feeding**

This medicine is not recommended for use in breastfeeding women unless absolutely necessary and the potential benefits outweigh the risks involved. Doctor may advise to stop breastfeeding for a certain period of time depending on clinical condition of patients.

#### **Side Effects:**

Major & minor side effects are as follows

- Nausea and Vomiting
- Diarrhoea
- Skin irritation and rashes
- Lower blood pressure