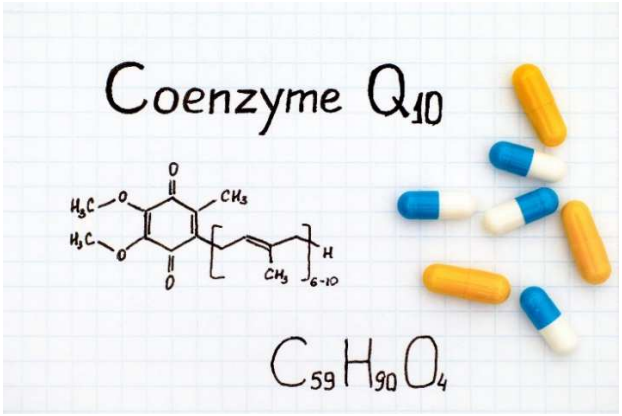
Coenzyme Q10



Coenzyme Q10 (CoQ10) is a vitamin-like substance, which acts similarly to vitamin E. Also known as ubiquinone, CoQ10 is critical to the production of energy in every cell in the body. A small molecule that can relatively easily penetrate into skin cells, it aids in circulation, stimulates the immune system, increases tissue oxygenation, and has vital anti-aging effects.

Studies have shown that it can effectively counteract free radical damage and provide significant protection against UVA-induced depletion of cell membranes. This helps prevent damage to collagen and elastin production processes, which helps avoid the formation of wrinkles.

CoQ10 has exceptional antioxidant properties; it improves both the rate and efficiency of energy production in the cells (including the skin) and also protects mitochondria from free radicals. CoQ10 is sometimes called a “biomarker of aging” because its levels in the skin correlate so well with aging.

In most people over 30, levels of CoQ10 in the skin is below optimum, which results in a lesser ability to produce collagen, elastin, and other important skin molecules. CoQ10-depleted skin tends to be more prone to damage caused by free radicals, which are particularly abundant with exposure of the skin to the elements.

Use in Cosmetics

CoQ10 comes in either a powdered form or, more sophisticated, encapsulated in liposomes (usually a phospholipid nano-emulsion loaded with 10% vitamin E). CoQ10 packed in liposomes is much more stable, maintains its activity, and significantly enhances skin penetration. This largely reduces the amount of CoQ10 required for effectiveness, compared to non-encapsulated pure CoQ10 in powder form.

CoC10 can be used in several products, including:

- Anti-aging & anti-wrinkle products
- Pre/after sun lotions
- Hydrating/rejuvenating & moisturizing skin care products
- Eye wrinkle treatments

Properties of CoQ10

- Synonyms:
  - Ubiquinone, ubidecarenone
- Structure:
  - Vitamin-like structure
- Occurrence:
  - Found in all human cells, in various intracellular organs (i.e. peroxisomes, vesicles, lysosomes, & mitochondria)
- Appearance:
  - Yellow to orange powder or liquid

The color of a product can help tell the amount of CoQ10 present

Features of CoQ10

When used in cosmetics, CoQ10 incorporated into liposomes is generally preferred. This ensures the CoQ10 is functionally protected and is much better absorbed by the skin. The typical use level (when packed in liposomes) is 2-6%.

CoQ10 offers effective anti-aging properties, acts as an antioxidant in both mitochondria and liquid cell membranes, neutralizes free radicals and prevents oxidative injury to DNA in cells. It is also essential in vitamin E generation.

CoQ10 is deep orange in color, which causes skin creams and lotions to become slightly yellowish or orange when a significant amount of CoQ10 is present in the product. This means the color of the product gives you a hint to whether the product contains significant amounts of CoQ10 or not.

Methods of Manufacturing CoQ10

CoQ10 can be either chemically synthesized from a natural derivative or biosynthetically by recombinant technology:

Extraction from Natural Resources: CoQ10 occurs at very low concentrations in natural resources and is extremely difficult to purify. This makes industrial manufacture of natural CoQ10 a non-practical option and would also lead to exorbitant prices.

Chemical Synthesis from a Natural Derivative: CoQ10 can be synthesized by using solanesol, an extract from plant material from the Eggplant family. This is converted into a nine-isoprenoid compound (decaprenol) and then reacted with hydroquinone to produce CoQ10.

Microorganism Method: Microorganisms such as yeast or bacteria can be stimulated to produce repeated mutations, thereby enhancing their capacity to synthesize CoQ10.

The older we get the less CoQ10 is found in the skin. CoQ10 creams are a great way to supplement this valuable substance!