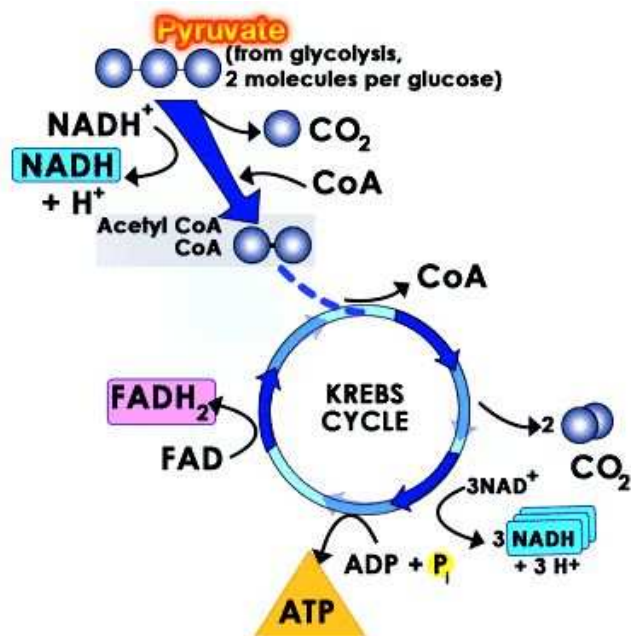


Inner Skin Activators

CARNOXYN

CARNOXYN: A CELLULAR ENERGY ACTIVATOR

Thanks to a long and deep research experience on the skin biochemistry, the scientists of CR&D have studied and present **CARNOXYN**, a new cosmetic ingredient active on epidermis and dermis cells, stimulating the Krebs cycle processes.



The **Krebs cycle** (also said Tricarboxylic acids cycle or Citric acid cycle) is a metabolic cycle of fundamental importance for all the cells those use oxygen in the cell respiration process. In the aerobic organisms the Krebs cycle is the junction ring of the metabolic pathways responsible of the degradation (catabolism) of the carbohydrates, of the lipids and of the proteins to carbon dioxide and water, with the production of chemical energy.

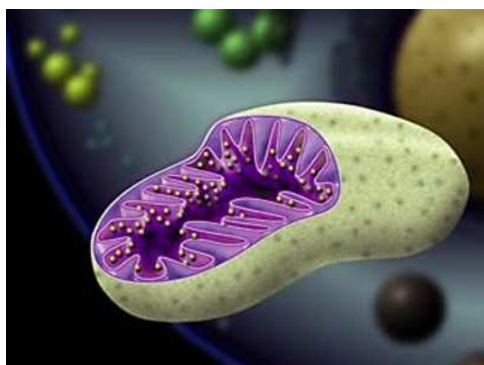
The Krebs cycle is a metabolic amphibolic pathway, because it takes part of both the metabolic and the anabolic processes. As a matter of fact this cycle also supplies a lot of forerunners for the production of some amino acids, alpha-ketoglutaric acid, oxaloacetic acid and other molecules fundamental for the cell life.

The Krebs cycle occurs in the mitochondrions of the eukaryote cell and in the cytoplasm of the prokaryote cells.

The glycydic and lipidic catabolisms produce the **acetyl-Coenzyme-A** through glycolysis and beta-oxidation. The **Acetyl Coenzyme-A** is the main substrate of the cycle. His deed consists in a condensation with oxalate to give citrate.

At the end of the cycle the two carbon atoms, left by Acetyl Co-A, are oxidized to two molecules of carbon dioxide, generating again oxaloacetate able to condense with Acetyl Co-A and so on, as a continuous cycle. Anyway, the most important yield from the energy point of view is a molecule of GTP, suddenly used to regenerate one molecule of ATP, three molecules of NADH and one of **FADH₂**.

CARNOXYN is a cosmetic active substance with a strong penetration power due to his special composition: **Carnitine fumarate, Sodium Pyruvate, Succinic acid, Citric acid**.



Its activity carries out on the mitochondrial functionality, due to the activity promotion on **carnityl transferase**, an enzyme involved in the fatty acids carrying in the inner part of mitochondrion, activating the cellular metabolism with production of energy.

CARNOXYN, after all, has to be considered a cosmetic activator that tonifies the cell operativity and increases the energy consumption (against localized adiposity and cellulitis).

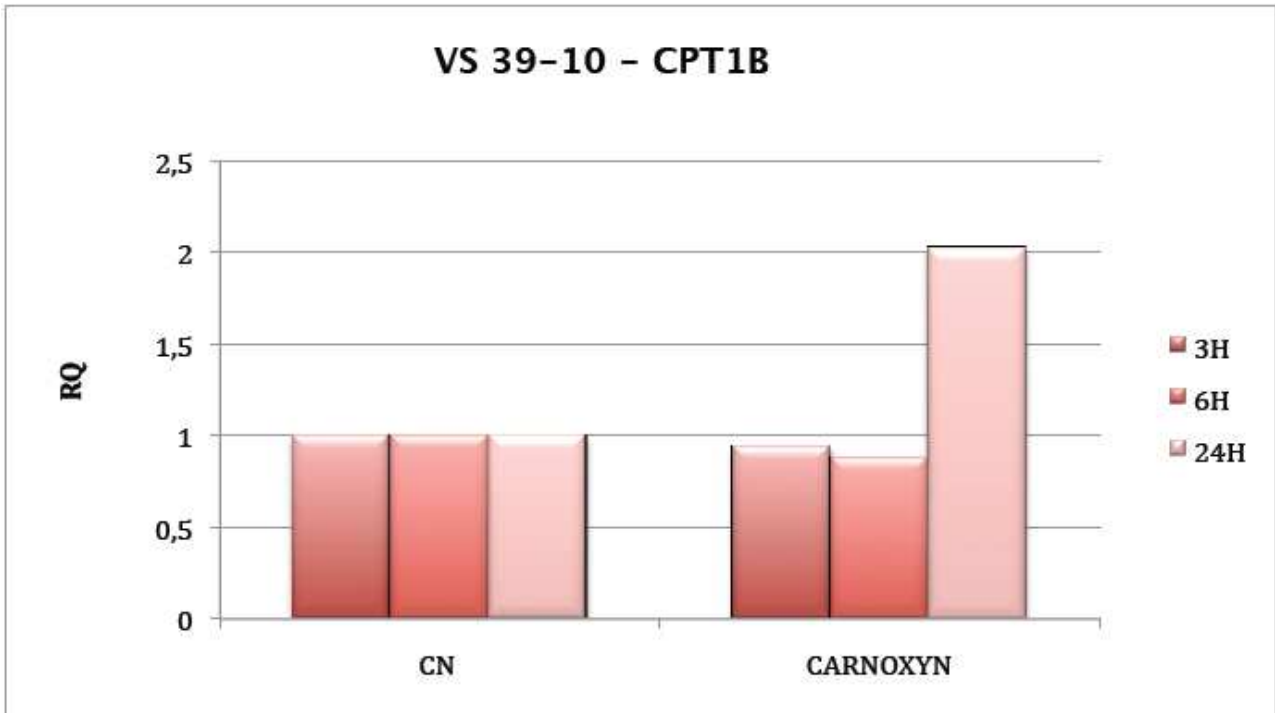
The toning of the cells carries his activity not only on the body, but also on the skin of the face, of the neck, of the décolleté and of the breast.

The skin looks more tight and firm, due to a better “respiration” activity of the cells

INCI name: Aqua, Carnitine Fumarate, Sodium Pyruvate, Succinic Acid, Citric Acid

% active matter = 15% % of use 1-10%

EVALUATION OF CARNOXYN 5% EFFECTIVENESS ON A DERMIS MATRIX

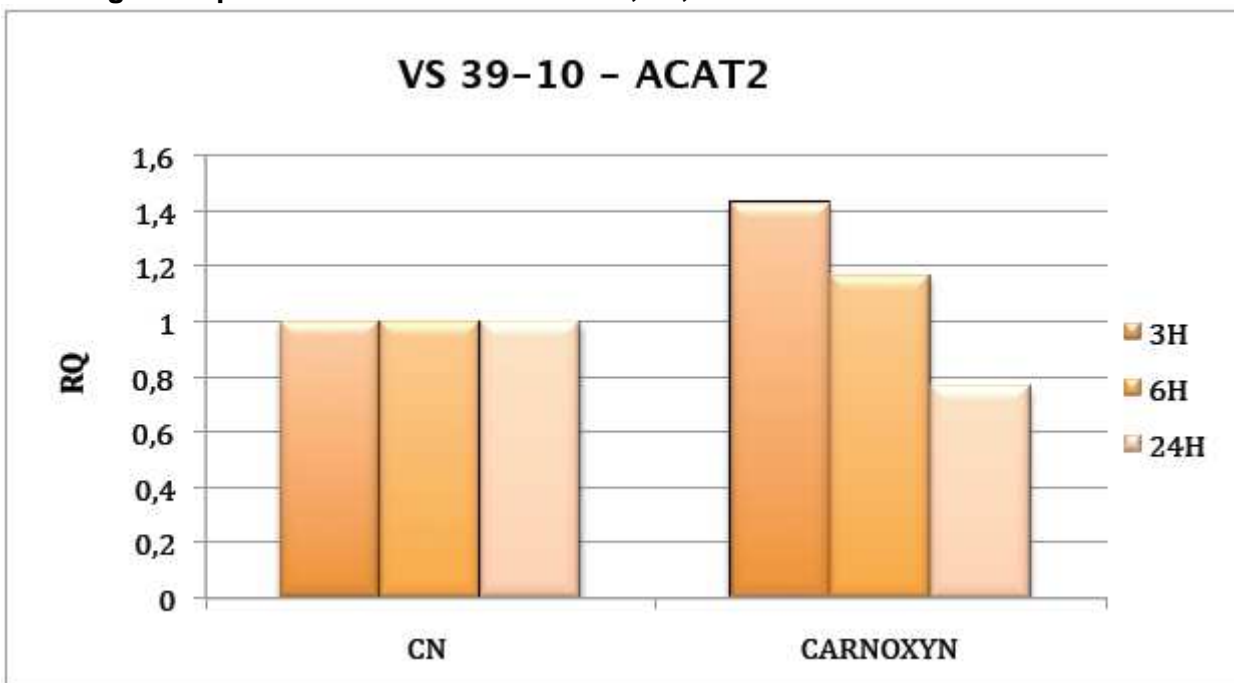


CPT1B CARNITINE PALMITOYL TRANSFERASE-1 gene expression after treatment of 3h,6h,24h with CARNOXYN

CN= Sodium Chloride water solution 0,9%

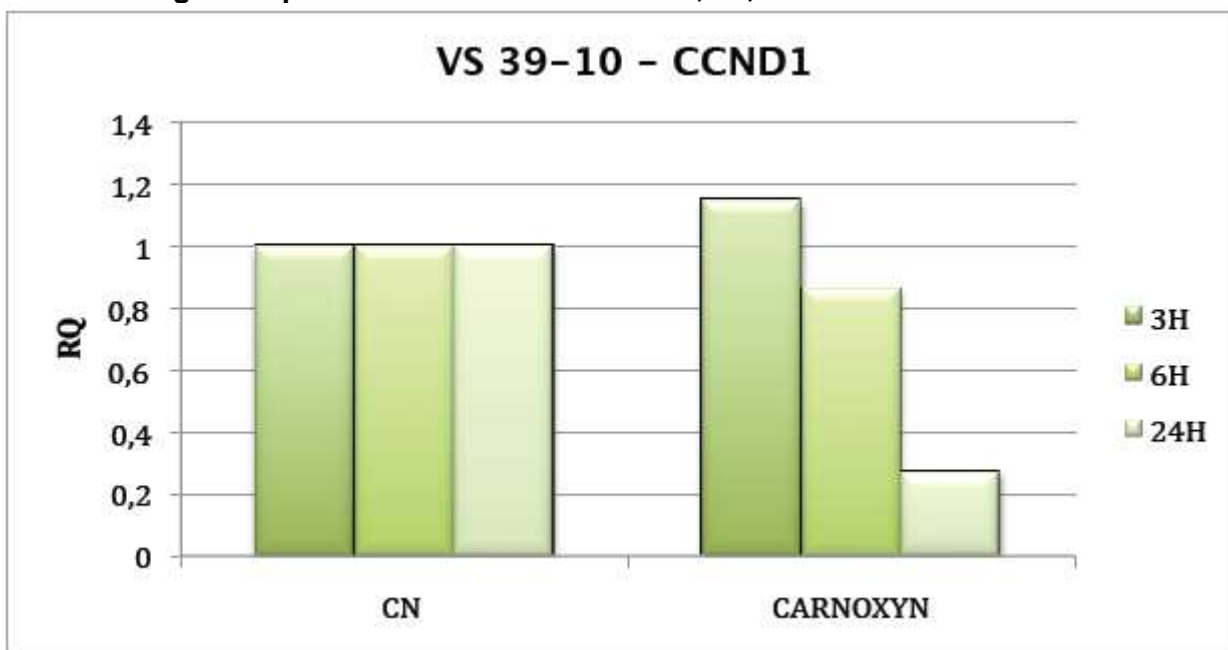
After treatment with CARNOXYN for 24h we can observe a meaning increase (RQ>2) of CPT1B expression, showing a Carnitine cycle and Krebs cycle activation, facilitating the making of acyl-carnitine

ACAT2 gene expression after treatment of 3h, 6h, 24h with CARNOXYN



After treatment with Carnoxyn for 24h no expression change of ACAT2 was observed

CYCLINE D1 gene expression after treatment of 3h, 6h, 24h with CARNOXYN



After treatment with Carnoxyn for 24h was observed a meaning change in CCND1: this result is connected to a stimulation of differentiation phase and of epidermis renewal.

CONCLUSIONS

This study was conducted on a model of human skin reconstructed in Vitro with the objective of evaluating the effectiveness of a new active and functional ingredient in a state of physiological homeostasis through the gene expression of selected biomarkers, on the basis of the products effectiveness.

The above results allow to set out the following activities:

activating action for acyl-carnitine formation (increase CPT1B) and subsequent production of acyl CoA facilitates the production of acetyl CoA by beta-oxidation subsequent entry in the Krebs cycle.

By the decrease of ACAT2 is prevented the accumulator of toxic quantities of fatty acids and acyl CoA: this allow acetyl CoA to go to the mitochondria for energy production, stored as ATP.

CARNOXYN has the general function of carrying the fatty acids inside the cells, so they can be used as energy suppliers from cellular mitochondria. **Carnitine**, and therefore **CARNOXYN**, after all, works by promoting fats combustion with increase of energy production.

DISTRIBUTOR



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