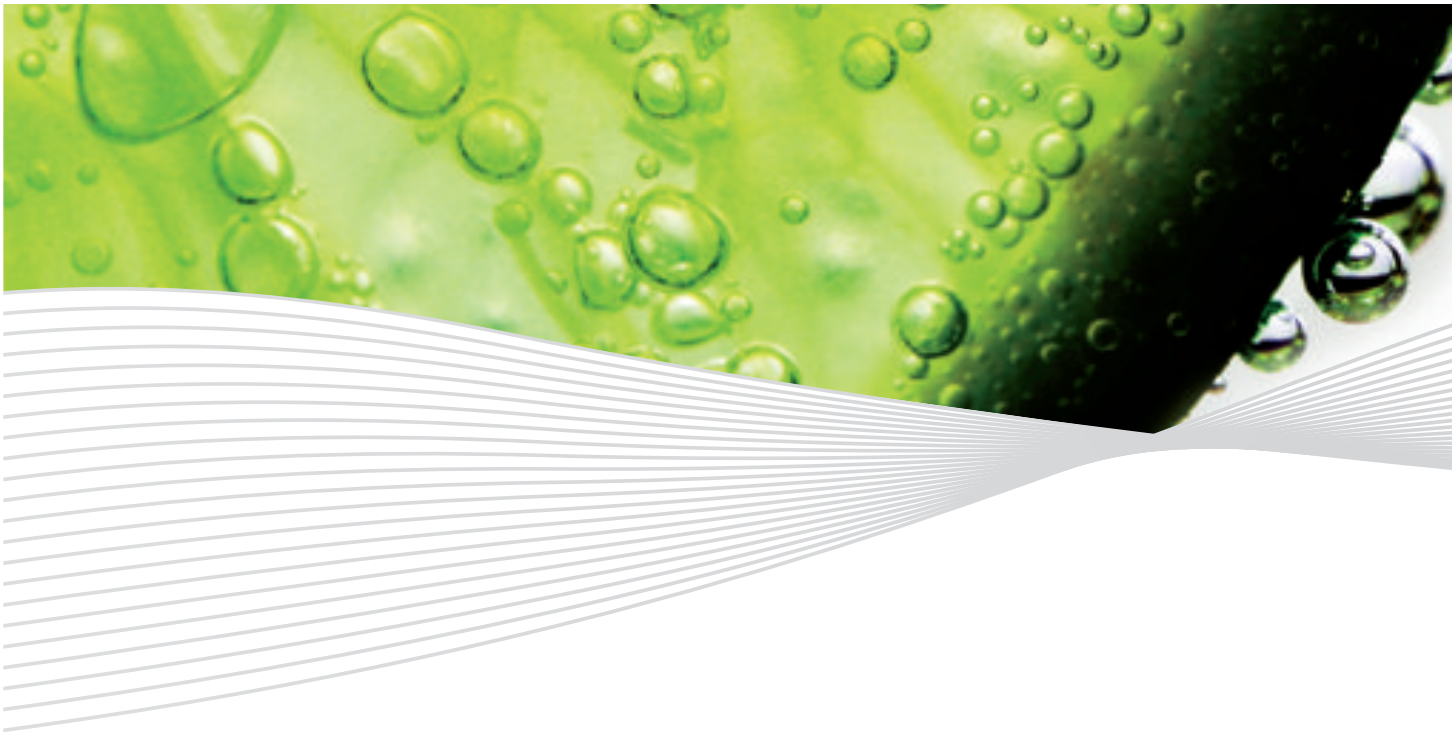


INNER SKIN ACTIVATORS
CARNOXYN

USES
Cellulitis and localized adiposity treatments
Skin tonification
Sport massage products

ORIGIN
Synthetic origin from vegetable sources

INCI NAME
Aqua, Carnitine Fumarate, Sodium Pyruvate, Succinic Acid, Citric Acid

FORMULATION SUGGESTIONS
% active = 15%
Water soluble. Stable to heat

RECOMMENDED QUANTITIES
% of use= 1-5 %

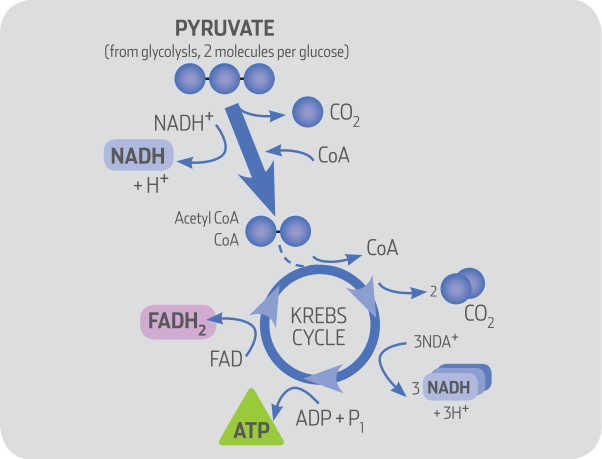
CR&D
COSMETIC RESEARCH & DEVELOPMENT

CARNOXYN: A CELLULAR ENERGY ACTIVATOR

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

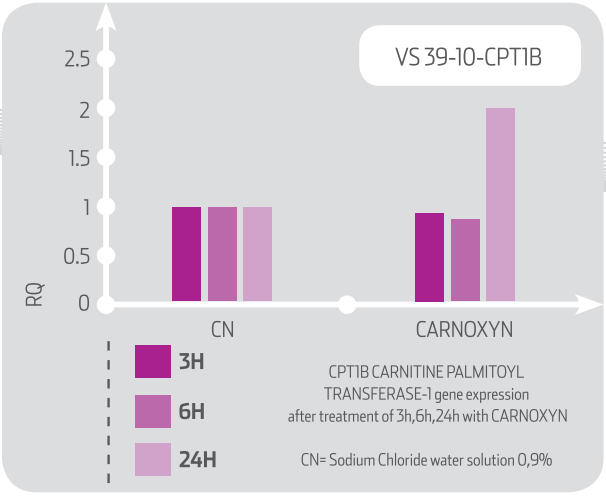
IN VIVO TESTS

The Krebs cycle (also called Tricarboxylic acids cycle or Citric acid cycle) is a metabolic cycle of fundamental importance for all the cells which 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, since it takes part in 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, such as 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.



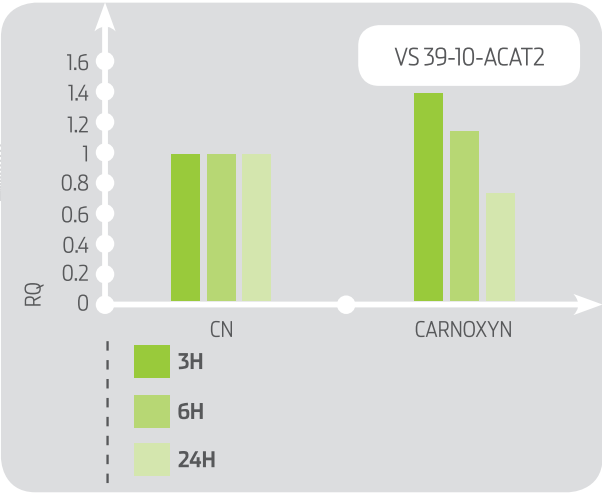
The glucydic and lipidic catabolisms produce the acetyl-Coenzyme-A through glycolysis and beta-oxidation. The Acetyl Coenzyme-A is the main substrate of the cycle. His past function consists in a condensation with oxalate to give citrate.
At the end of the cycle the two carbon atoms, left by Acetyl Co-A, are oxidized into two molecules of carbon dioxide, generating again oxaloacetate able to condense with Acetyl Co-A and so on, in 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 to the mitochondrial functionality, due to the activity promotion on carnityl transferase, an enzyme involved in the fatty acids carrying into the inner part of mitochondrion, activating the cellular metabolism with production of energy.
CARNOXYN, after all, should be considered as cosmetic activator that tonifies the cell operativity and increases the energy consumption (against localized adiposity and cellulitis).
The toning of the cells carries out its 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 tighter and firmer, due to a better "respiration" activity of the cells.

EVALUATION OF CARNOXYN 5% EFFECTIVENESS ON A DERMIS MATRIX

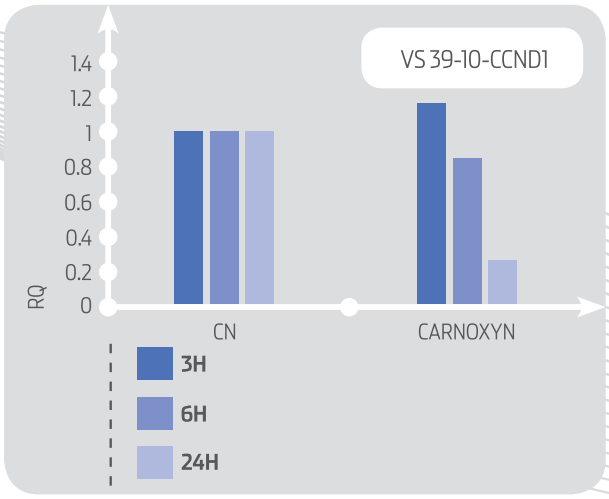


After treatment with CARNOXYN for 24h we can observe a meaning increase (RQ>2) of CPT1B expression, showing a Carnitine cycle and Krebs cycle activation, facilitating the making of acyl-carnitine.

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 a meaning change in CCND1 was observed: 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 target 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 results above allow us 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 subsequent entry of beta-oxidation in the Krebs cycle.
By the decrease of ACAT2 the accumulator of toxic quantities of fatty acids and acyl CoA is prevented:
this allows 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 that 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

EXAMPLE OF FORMULAS TO USE CARNOXYN

PRODUCT NAME: MOISTURIZING TONIFYING EMULSION
CODE M: 1106126

PHASE	INGREDIENTS (COMMERCIAL NAMES)	INCI Name	CONC. %
A1	beautyderm hp	glyceryl stearate,cetearyl alcohol,stearic acid, sodium lauroyl glutamate	5,00
A2	tegosoft ct	caprylic/ capric triglyceryde	7,00
A3	sweet almond oil	prunus amigdalus dulcis oil	5,50
A4	shea butter	butyrospermum parkii butter	1,00
A5	baobab oil	adansonia digitata seed oil	3,00
A6	cetyl alcohol	cetyl alcohol	2,00
A7	vyox	tocopherol, triethyl citate, BHA	0,20
B1	deionized water	aqua	q.b. a 100
B2	aristoflex avc	ammonium acrylodimethyltaurate/VP copolymer	0,50
B3	glycerin	glycerin	2,00
C1	aloe vera gel	aloe barbadensis leaf juice	5,00
C2	glycohyal	glycerin, hydrolyzed glycosaminoglycans,hyaluronic acid	3,00
C3	carnoxyn	carnitine fumarate, sodium pyruvate,succinic acid, citric acid	2,00
C4	glycogem buddleja	buddleja davidii leaf cell culture extract, hydrolyzed glycosaminoglycans, glycerin, acqua	2,00
C5	euxyl K701	phenoxyethanol, benzoic acid, dehydroacetic acid, ethylhexylglycerin	1,00
		CONC -TOTALE % = 100	