Elaborated date: 30/01/2013
Review 2

Aquaporine Active® AQP-3

Exclusive Technology & Innovative Concept

INTELLIGENT MOISTURIZING

Exclusive Technology & Innovative Concept

- Improves the water circulation through the cells
- It reinforces the natural reserve of water in the epidermis
- It restores hydration, softness and elasticity of the skin
- Stimulates cell renewal and skin barrier function

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Aquaporine Active AQP-3

Hydration and Skin

Hydration:

- Direct influence on the softness, elasticity and softness to the touch.
- Directly linked to normalization of the skin cell renewal.
- The biological hydration favors the appearance of the wrinkles and expression lines.
- The dry skin is more easily affected by pollutants and sunlight.

Global Care:

1 KEEP A NATURAL HYDRATION

2 RESTORE THE FUNCTION OF SKIN BARRIER

3 STRENGT THE CAPACITY OF ADAPTING TO EXTREME CONDITIONS

RESULT > Vitality + Comfort + Elasticity

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Aquaporine Active AQP-3
Innovating concept of cutaneous hydration

The aquaporines were first discovered by electronic microscopy in 1974, but they were only characterized in 1991 by Peter Agre, who received Nobel Prize in Chemistry in 2003 for this work.

The aquaporines are transmembranal proteins (or "water channel") that allows transport of water molecules across the plasmatic membrane of cells. The aquaporines are expressed as in the epithelial as in the endothelial cells.

A dozen aquaporines isoforms are present in mammals. Concerning about aquaporines found in the skin more specifically, an accomplished study was done in 2001 about the aquaporines of the types 3 and 9 (AQP-3 and AQP-9) in keratinocytes culture. In vivo studies confirm the presence of aquaporines type 3 in the human epidermis, which is responsible for the flow of water in the skin. This protein is expressed in the epidermal cells and is essential for cutaneous metabolism.

The goal of Aquaporine Active AQP-3 is to offer a system able to increase formation and stimulation of the activity of aquaporines present in human skin, allowing a better water transport through the different layers (dermis, epidermis).

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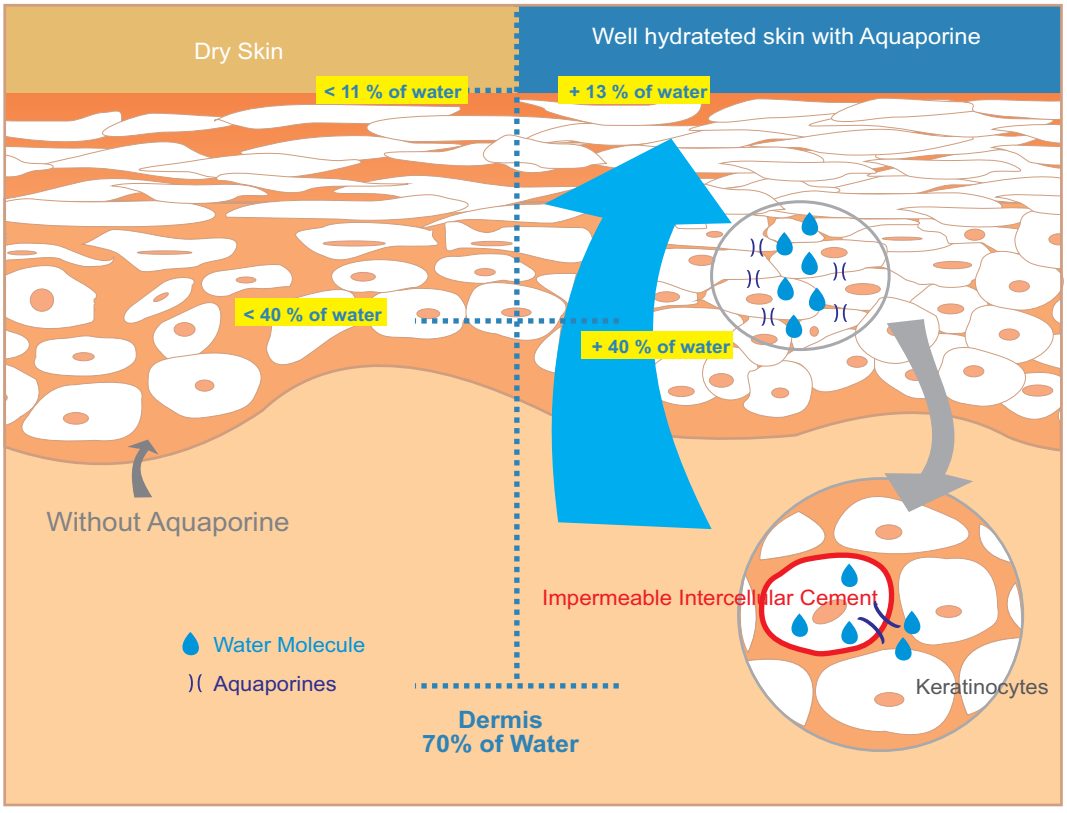
Aquaporines
Innovating concept of cutaneous hydration

The cell membrane is impermeable, so how the water can get through this medium? The discovery of aquaporines was the answer to this mystery. The increased presence of aquaporines-3 in the skin facilitates the water passage and improves the hydration of the stratum corneous, making it softer and smoother. Recent research indicates that aquaporines accentuate the transport of water from the dermis to the epidermis. It is believed that a single aquaporine is able to carry about three million of water molecules per second, improving the irrigation system and the circulation of water through the cells. The aquaporines helps maintain the skin hydria equilibrium even in the situation of extreme hydration, because they facilitate the diffusion of water molecules through membranes.

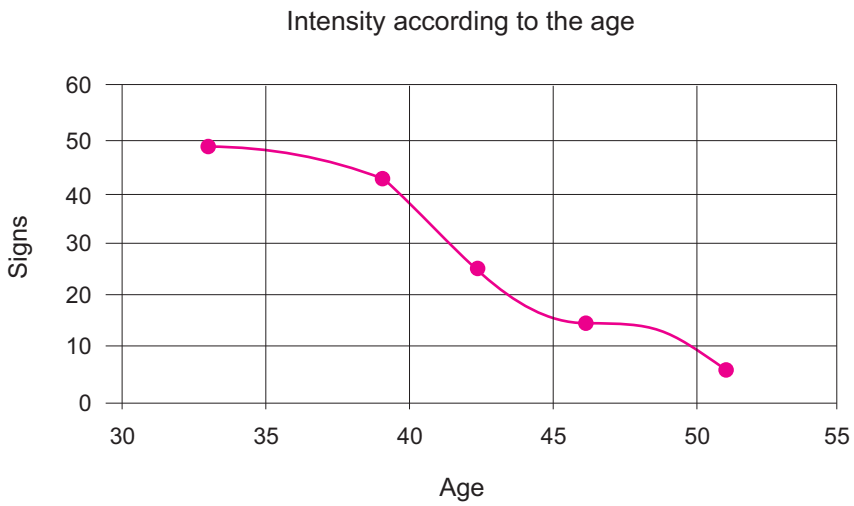
With advancing age the expression of aquaporine-3 is reduced, therefore it is necessary normalize the metabolism of aquaporines production in order to obtain a balanced flow of water from the dermis to the epidermis, thereby obtaining a skin more moisturized, soft and flexible.



Aquaporine Active AQP-3

The Aquaporine-3 Expression

The Aquaporine-3 Expression is related to age.
The graph below shows a significant reduction after 40 years



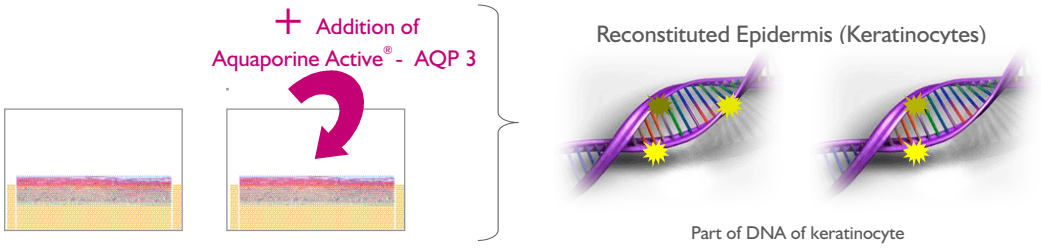
Aquaporine 3 (AQP3) average expression according to the age

Aquaporine Active AQP-3

The Aquaporine-3 Expression

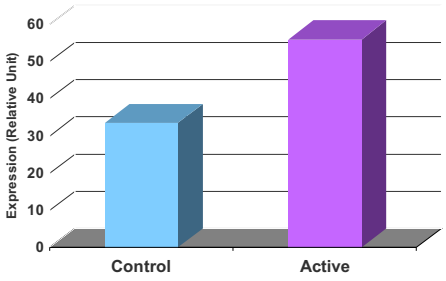
The Aquaporine Active AQP-3 is composed of an exclusive bio-peptide derived from the glutamic acid associated to the trehalose which is a disaccharide extracted from desert plants.

Aquaporine Active AQP-3 acts directly on keratinocytes, increasing the gene-aquaporine 3 production and other molecules involved in the "barrier" function. (dermis, epidermis).

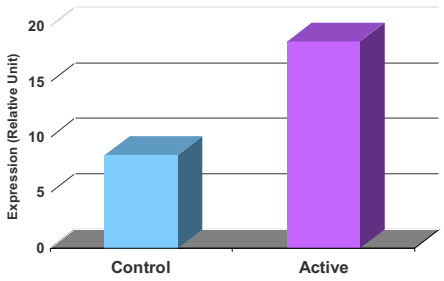


Results / Expressed Genes:

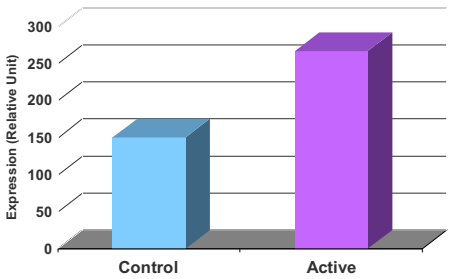
Glyceraldehyde 3-Phosphate Dehydrogenase(GAPD)



Aquaporine 3 (AQP3)



(Filaggrin) FLG



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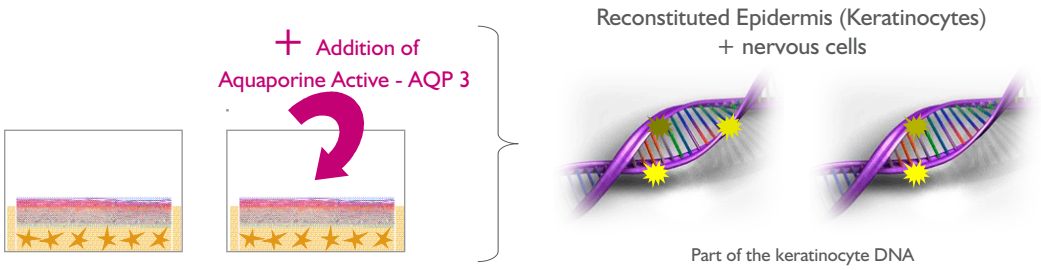
Aquaporine Active AQP-3

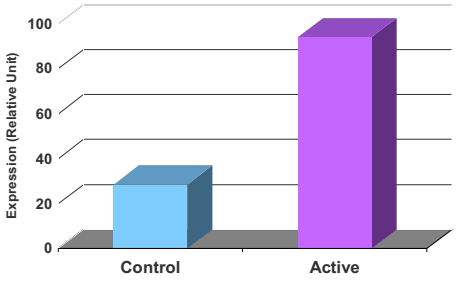
The Aquaporine-3 Expression

Aquaporine Active AQP-3 also acts directly in cells associations, and the study below proves the cooperation between keratinocytes and nervous cells in the presence of Aquaporine Active AQP-3.

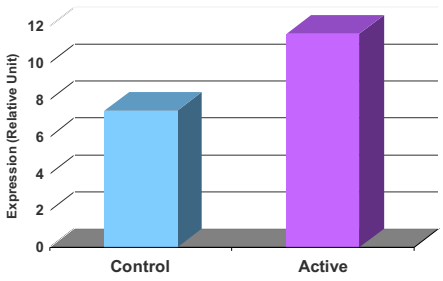


Results / Expressed Genes:

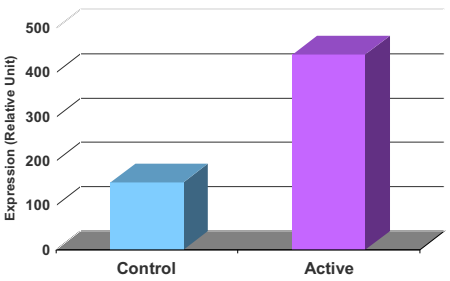
Glyceraldehyde 3-Phosphate Dehydrogenase(GAPD)



Aquaporine 3 (AQP3)



(Filaggrin) FLG



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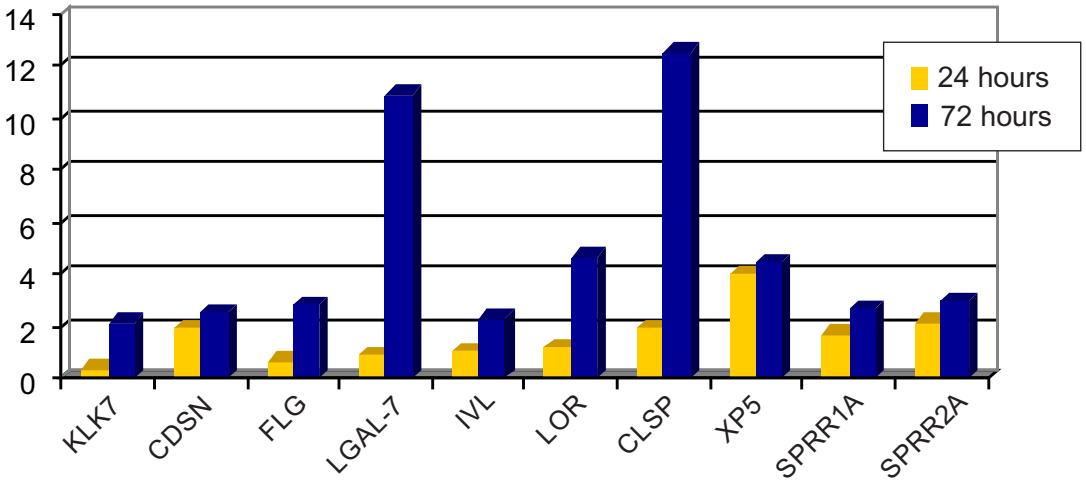
Aquaporine Active AQP-3

Epidermal Differentiation

The Aquaporine Active AQP-3 promotes the epidermal differentiation according to the result obtained in a co-culture model of keratinocytes and nervous cells which proved to be capable of increasing significantly the gene expression below, which form part of a group of genes responsible for preservation of "barrier" function (dermis, epidermis).



Mains genes expressed:

- Chymotrypsin
- Corneodesmosin
- Filaggrin
- Galectin-7
- Involucrin
- Loricrin
- Calmodulin – like Protein
- S100 Protein
- XP-5 Specific Protein
- Protein rich in proline (SPRR1A and SPRR2A)

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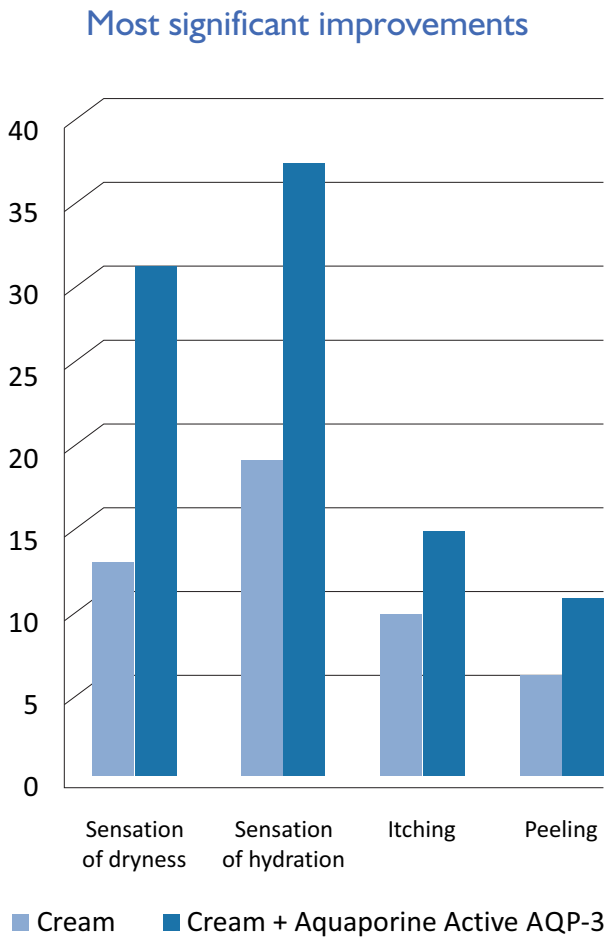
Aquaporine Active AQP-3

Action on sensitive skin

A cosmetic cream formulated with 5% of Aquaporine Active AQP-3 applied on the skin for a period of 14 days provided a significant improvement on dry and sensitive skin.



Evaluation with dermatological control and self-assessment

There was a significant decrease in dryness, hydration, itching and peeling of dry and sensitive skin.

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Aquaporine Active AQP-3

Technical Information

Physical and Chemical Data

Aspect (25°C)	: Liquid
Color	: Colorless to Yellowish
Density (25°C)	: 0.973 - 1.073
Refractive Index (25°C)	: 1.240 - 1.440
pH 100% (25°C)	: 4.0 - 7.0
Microbiology (molds)	: Absent
Microbiology (bacteria)	: Absent

Solubility

Miscible in water, alcohol and glycols.

I.N.C.I. Name

INCI name [1]	**CAS number** [1]	**EINECS number** [1]
Silanetriol Trehalose Ether	190270 -70-3	---
Glutamylamidoethyl Indole	---	---
Aqua	7732 -18-5	231-791-2
Glycerin	56-81-5	200-289-5

(1) Reference: (http://ec.europa.eu/consumers/cosmetics/cosing/index.cfm?fuseaction=search.simple), CosIng , Europe.

INCI name [2]	**CAS number** [2]	**EINECS number** [2]
Silanetriol Trehalose Ether	INCI Monograph ID: 10657	---
Glutamylamidoethyl Indole	478273-36-8	---
Aqua	7732-18-5	231-791-2
Glycerin	56-81-5	200-289-5

(2) Reference: Personal Care Products Council. Available at: http://webdictionary.personalcarecouncil.org/jsp/Home.jsp, USA.

Applications

Anti-aging formulations, sun care products, (during and after exposure), products for mature skin care and skin care products in general (moisturizing treatments, eye contour, revitalizing serum and products for male public).

Formulation

The Aquaporine Active AQP-3 is an aqueous solution perfectly stable. The product may be formulated in aqueous phase without any restriction. Do not have incompatibilities of common knowledge. The Aquaporine Active AQP-3 may be incorporated in emulsions, creams, milks and gels. It is suggested to incorporate in the final process, at temperature below than 40-45°C.

Aquaporine Active AQP-3

Technical Information

Recommended Dosage : 2.0 to 5.0%

Toxicity

The Aquaporine Active AQP-3 is not toxic. It presents perfect tolerance. (evaluation through cytotoxicity testing and on reconstituted epidermis).

Shelf Life

Thirty-six (36) months from the manufacturing date.

Storage

It should be stored in a covered area protected from light and humidity, at 5-30°C. Keeping the original packing hermetically sealed.

References

1) Site CosIng, Europe (http://ec.europa.eu/consumers/cosmetics/cosing/index.cfm?fuseaction=search.simple)

2) Personal Care Products Council; Online International Cosmetic Ingredient Dictionary & Handbook (wINCI); Copyright© 2008 Personal Care Products Council. Available at: <http://webdictionary.personalcarecouncil.org/jsp/Home.jsp>, USA. Accessed in: Jul 22, 2016.

Aquaporine Active® AQP-3

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