

NAQI®
ORAL CARE

Oral Care Gel **PRO**

with natural stress-protecting™
molecules

Oral Care Gel PRO

With natural stress protection molecules

NAQI ORAL CARE **improves** the **recovery, protects and strengthens** the **gums**.
It prevents the formation of a biofilm on the teeth, **reducing** the occurrence of **dental plaque**.
It **stabilises** the **resident oral flora**, preventing the build up of pathogenic bacteria.

Lasting healthy teeth and gums thanks to **natural stress protection molecules**, so called extremolytes.

Extremolytes are formed inside of extremophilic microorganisms and plants. Extremolytes can survive under the most extreme conditions and are found in extreme environments such as deserts, salt lakes, the polar ice or geysers.

Extremolytes possess **unique biological defense mechanisms** to combat extreme environmental stresses, and in case of oral health they provide a protective film on the teeth and gums.

NAQI ORAL CARE contains **Ectoin, Glyceryl Glucoside and Betaine** which are cell boosters and **Polyquaternium-51** which is a cell protector.

These additives have **a triple function**:

- They **protect and stabilise** the **resident oral flora**, making it more difficult for harmful microorganisms to survive .
- They **increase** the **cell metabolism** and stimulate the healing process.
- They **intensively hydrate**, prevent and reduce the symptoms of a dry mouth: redness, burning feeling.

NAQI ORAL CARE is **pH neutral** and is **free of fluoride** and **chlorhexidine**.

Ectoin

- Protects the cells from external stress factors, stabilises the cell membranes
- Reduces inflammation
- Stabilises resident oral flora, reduces the colonization of pathogenic bacteria
- Aides in case of xerostomia

Glyceryl Glucoside

- Improves wound healing
- Natural cell energizer, boosts cell regeneration and cell functions
- Improves skin structure
- Improves tissue regeneration

Betaine

- Reduces irritation
- Protects from dehydration
- Calms the gums

Polyquaternium-51

- Prevents the formation of a biofilm
- Reduces the formation of dental plaque
- Reduces halitosis

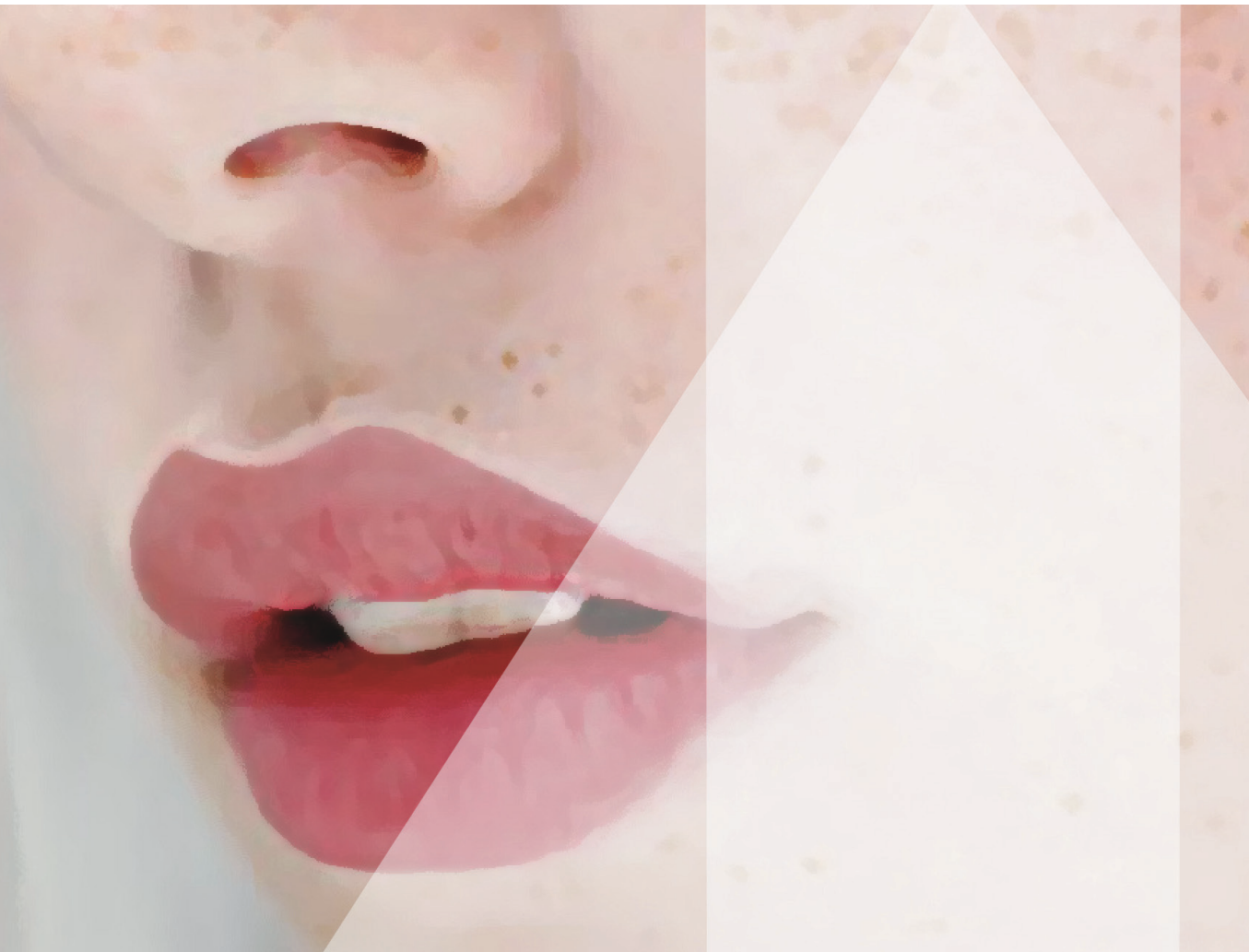
Desert

UV radiation & dryness

Life under extreme conditions needs extreme protection

Oral Care Gel **PRO**

With natural stress protection molecules



NAQI Oral Care Products

■ NAQI Oral Care Gel PRO

Intensive care.
For dentist's use.

Boosts the healing process. The high concentration of extremolytes stimulates the cell metabolism after a procedure and improves the recovery. Provides a very intensive local effect and can be applied immediately after a procedure.

Aqua, Propanediol, Glycerin, Diglycerin, Ectoin, Glyceryl Glucoside, Polysorbate 20, Lauryl Glucoside, Polyquaternium-51, Phenoxyethanol, Acrylates / C10-30 Alkyl Acrylate Crosspolymer, Mentha Piperita Oil, Ethylhexylglycerin, Sodium Hydroxide, Xanthan Gum.

Packaging: 100ml airless



■ NAQI Oral Care Gel

For healthy gums.
For patient's use.

Apply during the recovery stage after a procedure and daily afterwards to maintain the gums' healthy condition. Can be used as toothpaste.

Aqua, Propanediol, Glycerin, Betaine, Diglycerin, Polysorbate 20, Ectoin, Glyceryl Glucoside, Lauryl Glucoside, Polyquaternium-51, Phenoxyethanol, Acrylates / C10-30 Alkyl Acrylate Crosspolymer, Mentha Piperita Oil, Ethylhexylglycerin, Sodium Hydroxide, Xanthan Gum.

Packaging: 100 ml airless



■ NAQI Oral WASH & RINSE

For patient's use.

Apply before a procedure, to rinse the mouth. Suitable for use during the recovery stage after a procedure and on a daily basis to maintain the gums' health.

Aqua, Propanediol, Glycerin, Betaine, Diglycerin, Polysorbate 20, Ectoin, Glyceryl Glucoside, Lauryl Glucoside, Polyquaternium-51, Phenoxyethanol, Mentha Piperita Oil, Ethylhexylglycerin, Xanthan Gum.

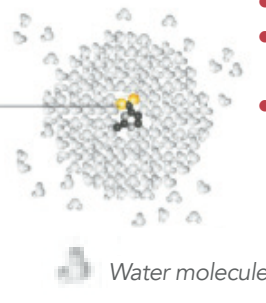
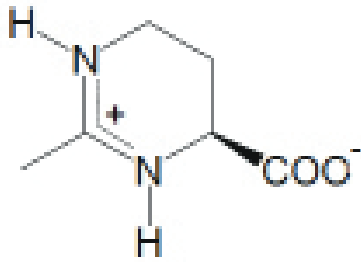
Packaging: 250ml



Ectoin[®]

Bitop AG all rights reserved

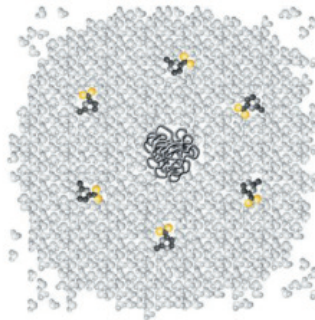
- Found in microorganisms living under extreme conditions (e.g. Salt lake in Egypt)
- Protects microorganisms from hostile environments (high UV radiation, heat, cold, salt etc.)



- Ectoin[®] is a water forming substance
- Increases the number of neighboring water molecules
- Enhances the binding strength of neighboring water molecules and therefore strengthens the water structure around Ectoin[®] molecule.

Bitop uses the inflammation-reducing and cell-properties of Ectoin[®]

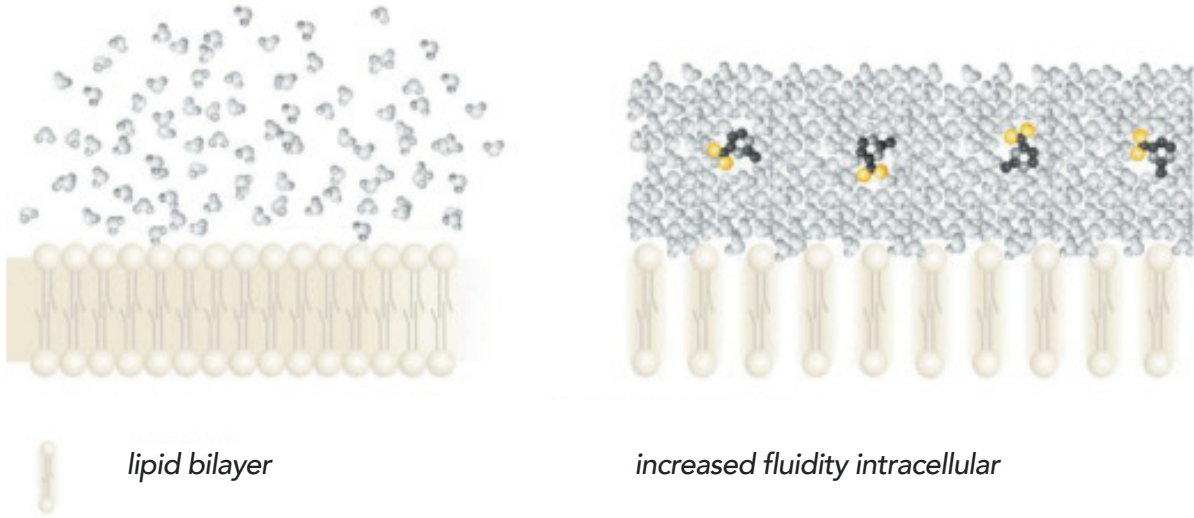
■ Stabilises biomolecules



• Results

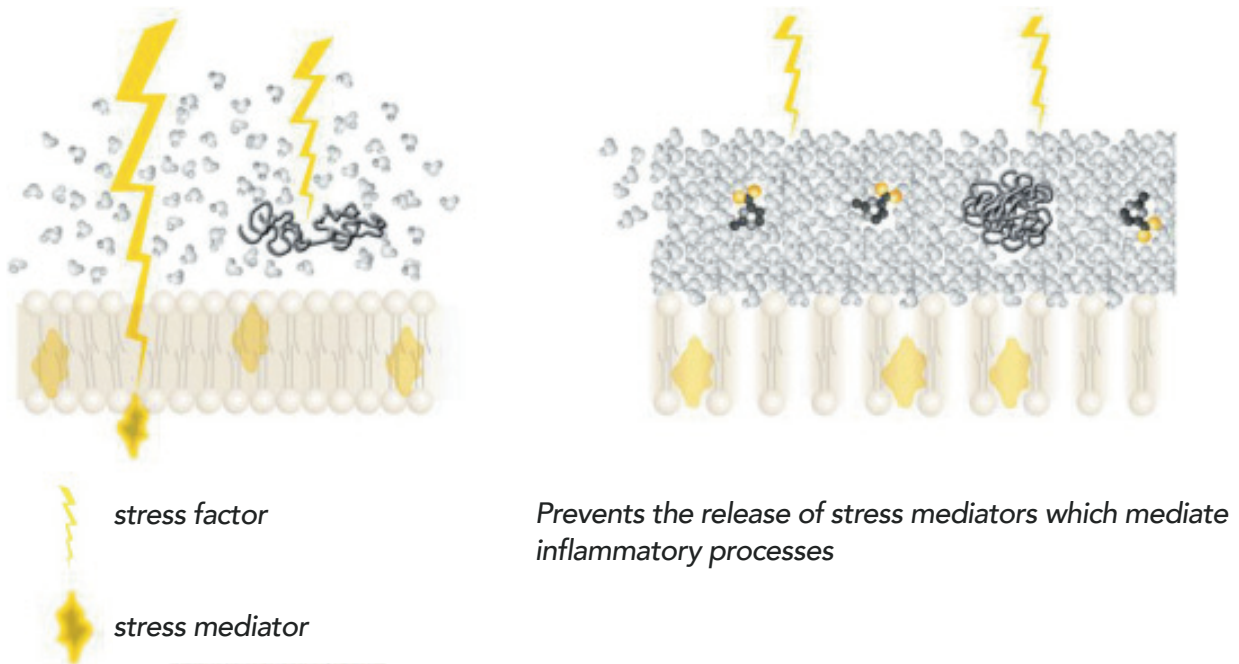
In case of external stress this film minimises the degradation of the biomolecules.

■ *Stabilises celmembranes*



- *Results* | *Increased fluidity intercellular.*

■ *Hydro Complex protects the membrane*



- *Results* | *Prevents the release of stress mediators which mediate inflammatory processes.*

Glyceryl Glucoside

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Ressurrection Plant



During dry season

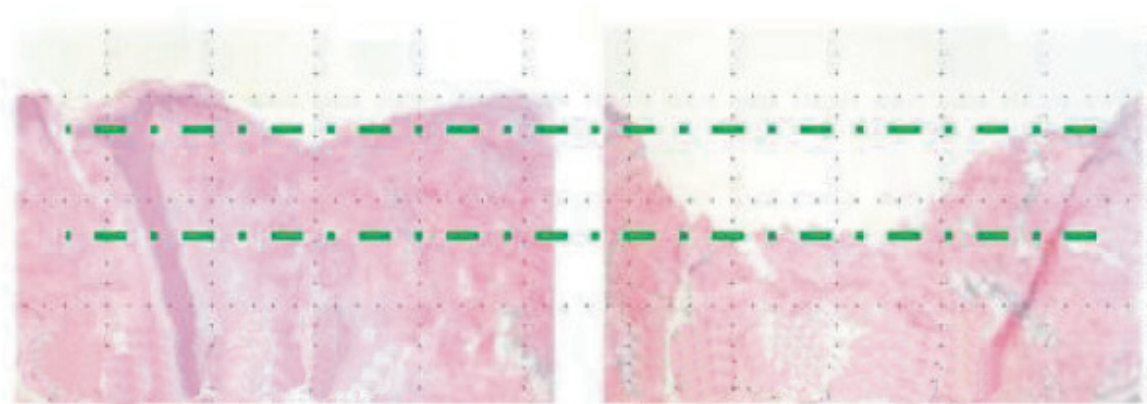


During rainy season

Ressurrection plant

■ *Wound healing benefits*

1- Ex Vivo



treatment with Glycoin[®] natural

treatment with control (placebo)

• *Protocol*

- *ex vivo skin model; surface was mechanically reduced by 3 mm (loss of epidermis and dermis)*
- *immediately after wound making, wound spot was covered with 5 μ pBS with 2,38% Glycoin natural and without (placebo)*
- *incubation for 48h in cell incubator*
- *hematoxylin/eosin staining of skin model for evaluation*

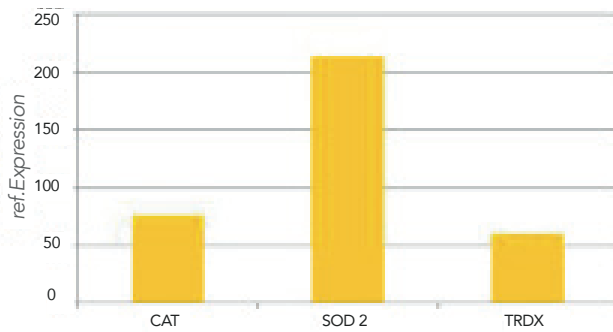


• *Results*

Glycoin[®] natural treated wounds show excellent and faster healing after 48h in comparison to placebo treated control.

2 - In Vitro

Expression file after treatment with Glycoin[®]



CAT (Catalase), SOD2 (superoxidedismutase 2) and TRDX (Thioredoxin) are ROS scavenger. They are very important for a proper wound healing process.

Relative gene expression file of CAT, SOD2 and TRDX.

• Protocol

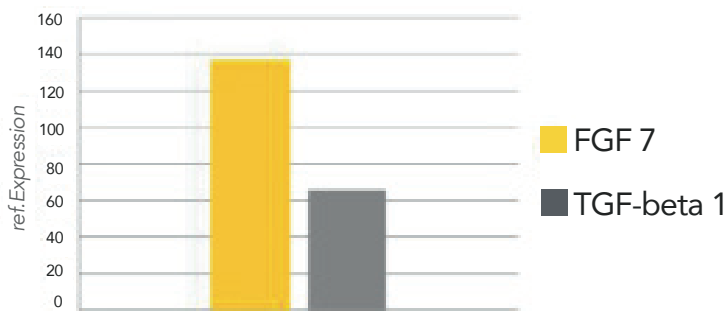
- cDNA array for gene expression of human dermal fibroblasts incubated with 1% Glycoin[®] natural
- incubation for 96h
- measured parameters: ROS scavenger CAT, SOD2 and TRDX

• Results

Increased expression of CAT, SOD and TRDX after treatment with Glycoin[®] natural.

3 - In Vitro

Expression of growth factors after Glycoin[®] natural treatment



Relative gene expression file of FGF 7 and TGF-beta1.

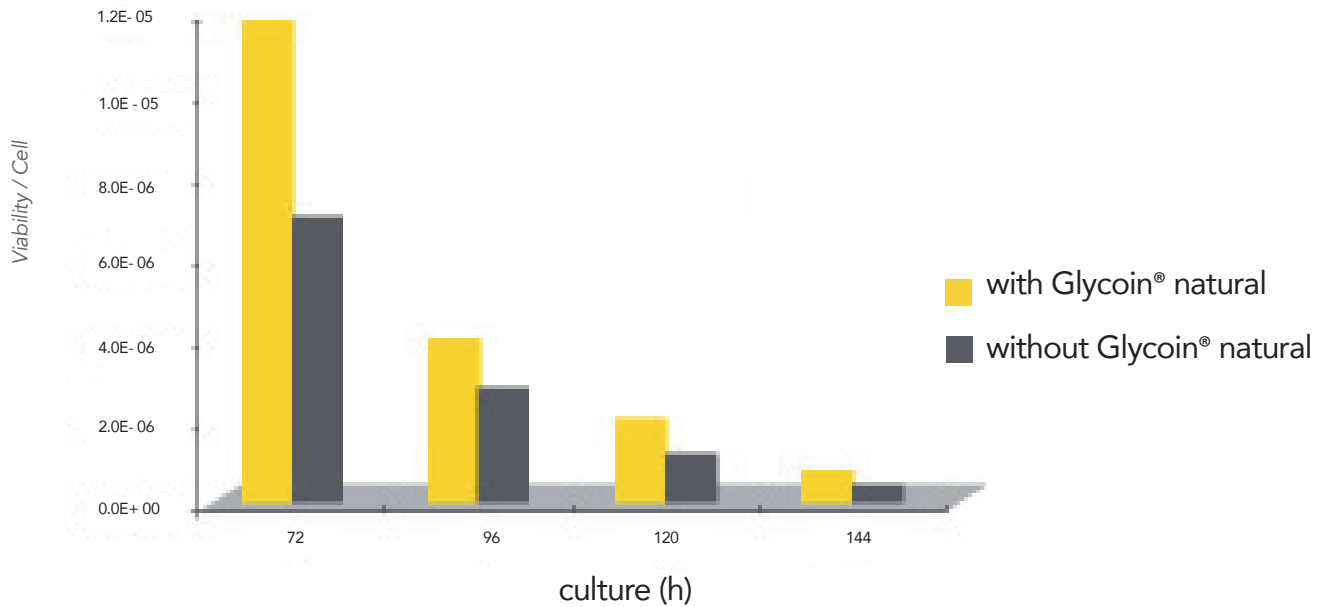
• Protocol

- cDNA array for gene expression of human dermal fibroblasts incubated with 1% Glycoin[®] natural
- incubation for 96h
- measured parameters: growt factors FGF 7 & TGF-beta 1

• Results

Increased expression of the wound healing related growth factors FGF 7 (fibroblast growth factor) and TGF-beta 1 (transforming growth factor beta-1) after treatment with 1% Glycoin natural.

■ Increase of cell viability



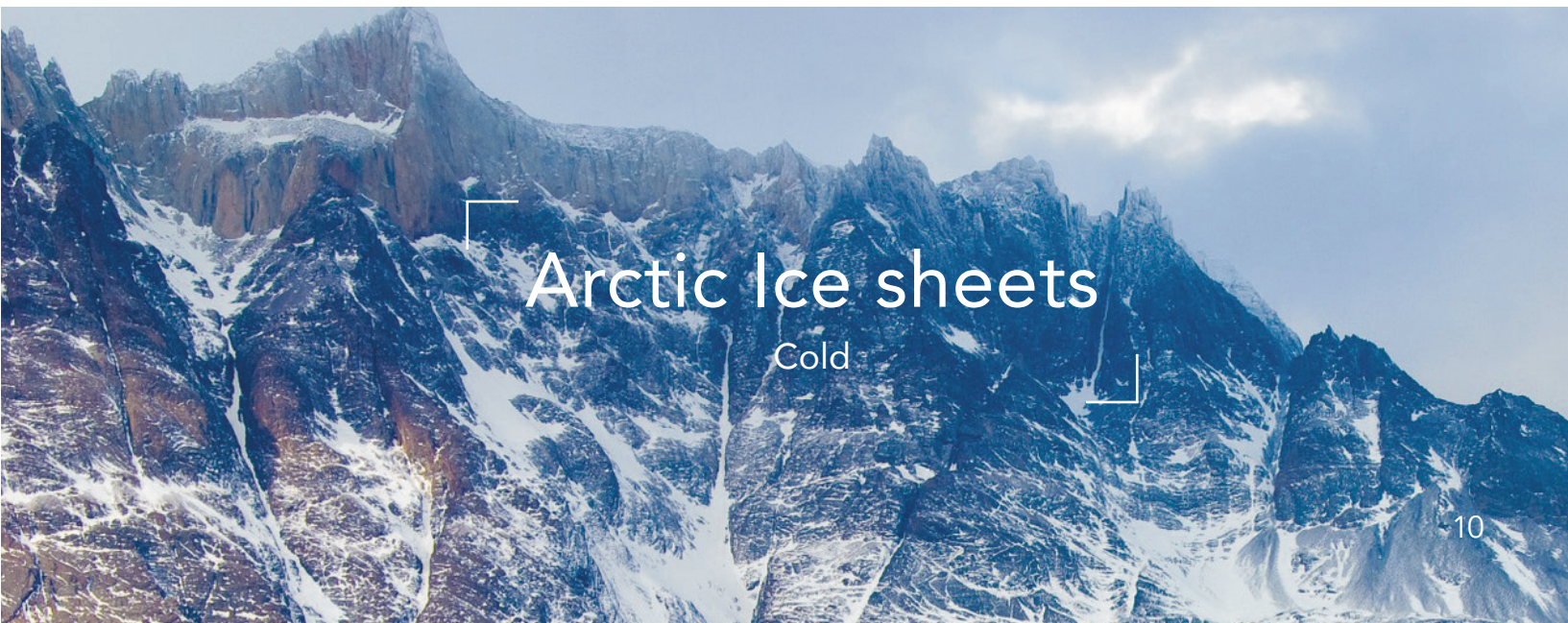
Cell viability of NHEKs - Comparison of Glycoin[®] natural treated cell to untreated cells.

• Protocol

The cell viability of NHEKs cultivated in the presence and absence of Glycoin[®] natural (1%) was conducted in the same experimental setup.

• Results

Cells which had been cultivated in the presence of Glycoin[®] natural showed considerably higher metabolic activity than those which had been treated with the control. The cell metabolism per cell enhanced by up to 170%.

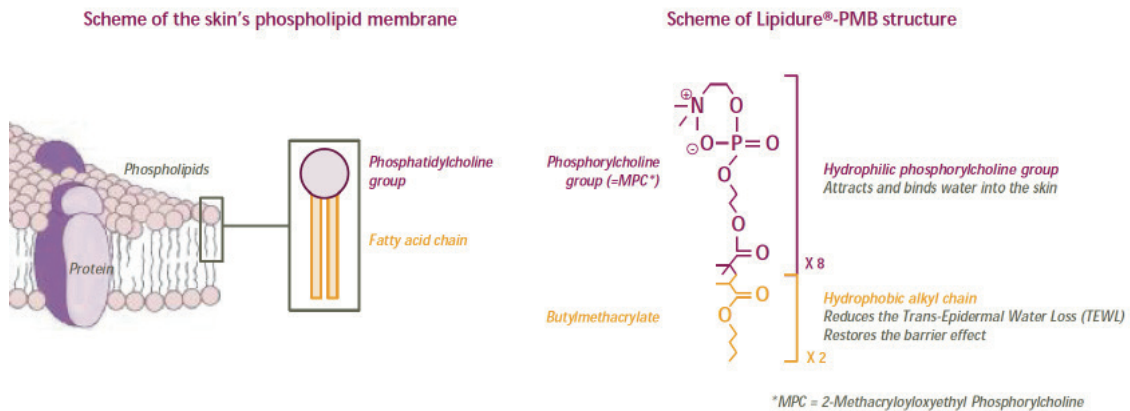


Arctic Ice sheets

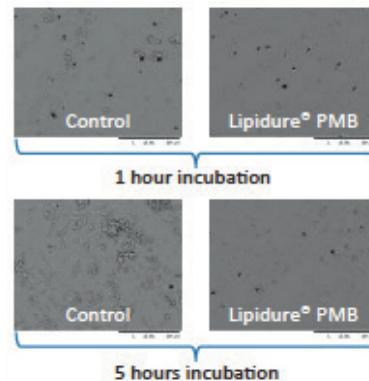
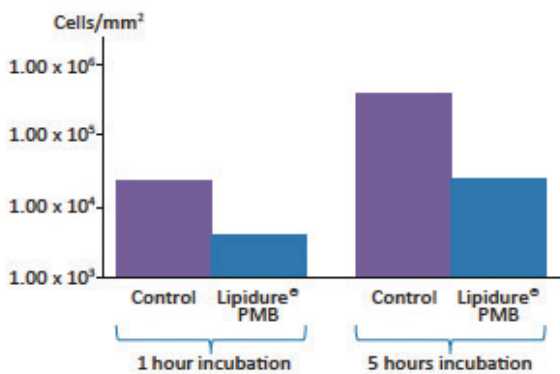
Cold

Polyquaternium-51

Lipidure[®] PMD all rights reserved



■ Protects against primary infection



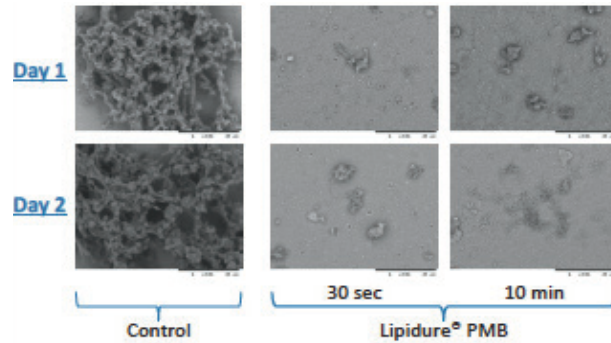
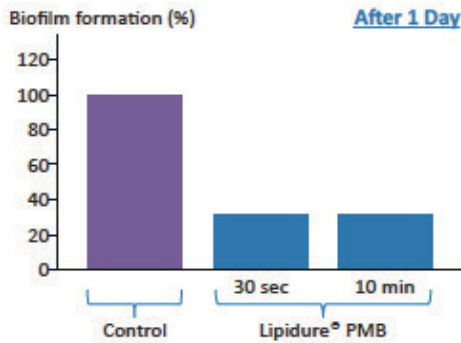
• Protocol

HAD (hydroxyapatite disk) is treated with filtered human whole saliva for 10 min, and with Lipidure[®] PMB (commercial solution - pure) or distilled water for 10 min at room temperature. Streptococcal suspension (1.0×10^7 CFU/mL) is added and incubated at 37°C for 1 and 5 hours. After incubation, adherent cells are counted by image analysis of 10 randomly selected highpower fields by SEM, and the number of bacteria/1mm is calculated.

• Results

Lipidure[®] PMB significantly inhibits the adhesion of *Streptococcus mutans* to hydroxyapatite plate by 84% at one hour and 94% at 5 hours.

■ **Prevents biofilm formation of *Streptococcus mutans* on HAD** *In Vitro*



• **Protocol**

HAD is treated with filtered human whole saliva for 10 min, and with Lipidure[®] PMB (commercial solution - pure) or distilled water for 10 min at room temperature. Streptococcal suspension (1.0×1.0^7 CFU/mL) is added and incubated at 37°C for 1 and 5 hours. After incubation, optical density of the bacterial suspension collected from biofilm with 1.0 N NaOH is measured at 655nm. Percent biofilm formation (control=100%) is expressed.

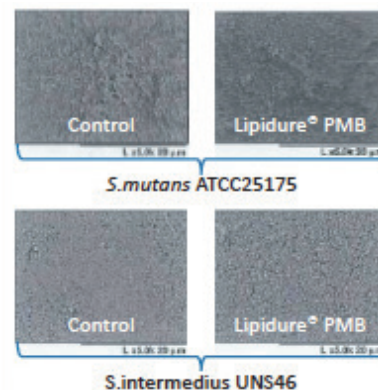
• **Results**

Treatment with Lipidure[®] PMB prevents biofilm formation even after 30 sec.

■ **Protects the mouth over time** *In Vitro*

• **Protocol**

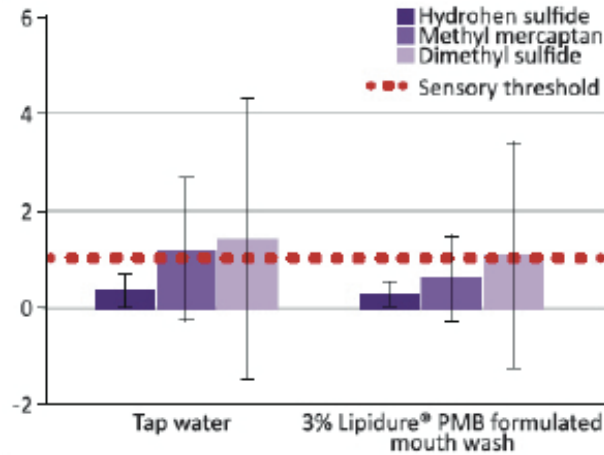
Biofilms of *S.mutans* or *S.intermedius* formed on a hydroxyapatite film are coated with filtered human whole saliva for 10 min at room temperature, and with Lipidure[®] PMB (commercial solution - pure) or PBS for 30 sec. After washing the disks with PBS, *F.nucleatum* is added to streptococcal biofilms and anaerobically cultured at 37°C for 1 hour. After cultivation, the adherence of *F.nucleatum* to the streptococcal biofilm are observed by SEM.



• **Results**

Lipidure[®] PMB significantly reduces the dental plaque formation. Lipidure[®] PMB treatment significantly inhibits the adherence of *F.nucleatum* to both saliva-treated streptococcal biofilms in 30 sec.

■ Mouth wash decreases halitosis



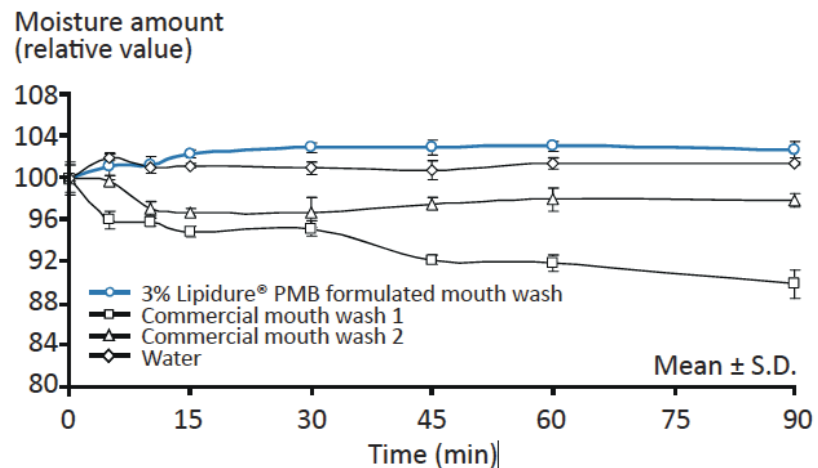
• Protocol

9 volunteers use mouth wash with or without Lipidure[®] PMB just before bed during 3 days. Halitosis is measured just after waking-up with a Oralchroma^{*}, a simple gas chromatography systems which measures 3 major halitosis substances:

- hydrogen sulfide (coated tongue)
- methyl mercaptan (plaque)
- dimethyl sulfide (lung)

• Results | Lipidure[®] PMB mouth wash suppresses halitosis.

■ Mouth wash helps maintain oral moisturization



• Protocol

3 volunteers wash their mouth with:

- 3% Lipidure[®] PMB formulated mouth wash
- commercial mouth wash 1
- commercial mouth wash 2
- water

The moisture amount in oral cavity is measured after using the mouth wash with Oral cavity moisturizing meter MUCUS (Life Co.Ltd.)

• Results | Lipidure[®] PMB formulated mouth wash can maintain the moisture content in the oral cavity.



Geysire

Heat

NAQI[®]

ORAL CARE

Research & Development by G.Claes
Dentist and Head of R&D
NAQI nv/sa

Stadsbeemd 1037
3545 Halen, Belgium
Tel.+32(0)13 460 190
info@naqi.com
www.naqi.com

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