Unisooth PN-47

A complete reduction of pro-inflammatory factors for an instant soothing

Skin irritation is amplified and controlled by various signaling pathways.
By acting directly on the causes of skin irritation, Unisooth PN-47 provides an instant soothing response:

1) Curative action: inhibition of one of the major signaling pathways: JAK/STAT
   - Instant interruption of cross communication between cells;

2) Preventive action: control of 12 chemokines and cytokines release
   - Diminution of the pro-inflammatory factors for a prolonged effect.

instant inflammation extinguisher

induchem

Focus on the product

Skin irritation is a real concern for women

Almost 3 out of 4 women claim to have an irritated skin[1]. Discomfort, tightness, dryness and redness of the face and body are the major signs of such irritation.
Irritation and skin sensitivity are triggered by aggressions such as shaving, waxing, peeling, sun exposure or laser treatments. Therefore, the need for instant soothing is important.

A major pathway in skin irritation: the JAK/STAT signaling pathway

Skin irritation is sustained by a cross-talk mechanism between keratinocytes in the epidermis layer and the infiltrating immune cells. This leads to an amplification loop creating an over-reaction inside the skin.
The JAK/STAT signaling pathway has one of the most important roles in sustaining this amplification loop. By providing the cross-talk mechanism, the production of cytokines is increased.

Unisooth PN-47: a powerful molecular switch...

Unisooth PN-47 takes advantage of a powerful combination of panthenyl triacetate and naringenin to directly act on the causes of skin irritation. Panthenyl triacetate is well known for increasing wound healing, improving skin barrier, reducing UV-induced erythema, and more generally for its anti-irritation properties. On the other hand, Naringenin, which is extracted from citrus fruits, is known to inhibit pro-inflammatory cytokines in fibroblasts[2] and more recently for its capacity to decrease inflammatory signaling pathways such as JAK/STAT[3].

... for an instant soothing effect

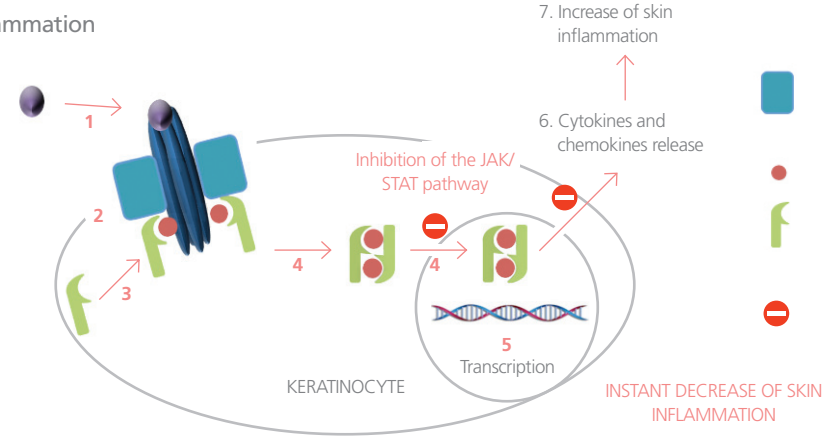
Unisooth PN-47 has a strong multi-level mechanism of action:

- Curative: it inhibits one of the major inflammatory pathway, the so called JAK/STAT signaling pathway to avoid cross-talk between cells.
- Preventive: it decreases the mRNA synthesis of 12 major cytokines and chemokines to promote a prolonged soothing effect.

A clinical study on 25 volunteers has demonstrated a significant reduction of skin irritation and dehydration instantly in only 15 minutes.

Instant decrease of skin inflammation

1. Cytokine binds to its receptor
2. Phosphorylation of receptor residues by JAK
3. Phosphorylation of STAT
4. Dimerization of STAT and entrance in the nucleus



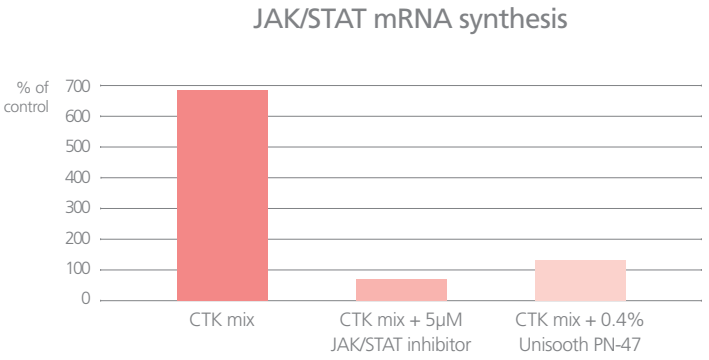
1. IPSOS Health & Beauty, 2005
2. J Periodontal Res 43(4), 2008
3. Arch Biochem Biophys 484(1), 2009

Biological activity

Curative action: control of JAK/STAT, the major inflammation pathway (*in vitro* test)

Unisooth PN-47 was tested for its ability to inhibit the JAK/STAT pathway. Normal human epidermal keratinocytes (NHEK) were pre-incubated for 6 hours in a medium containing Unisooth PN-47 at 0.4% or the JAK/STAT inhibitor Pyridone 6 at 5µM. They were then treated with a cytokine mix (oncostatin M, Interleukin 17 and TNF-α) referred to as CTK mix for 24 hours. mRNA expression was determined by q-RT-PCR.

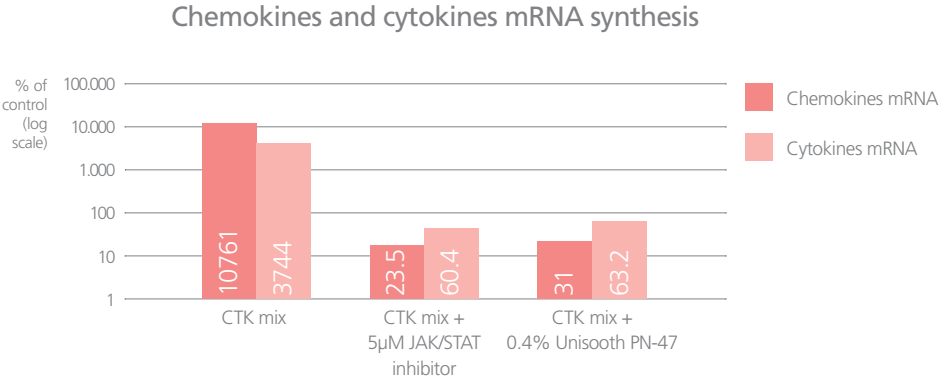
Result: Treatment with 0.4% of **Unisooth PN-47 inhibits 80% of the JAK/STAT signaling** compared to CTK mix to reach nearly the same level as Pyridone 6, a powerful reference JAK/STAT inhibitor.



Preventive action: control of the expression of pro-inflammatory factors (*in vitro* test)

Unisooth PN-47 was tested for its ability to decrease chemokines (CCL5, CXCL10, CXCL5, CXCL6) and cytokines (IL-1α, IL-1 receptor type 1, IL-1 receptor type 2, IL-1 receptor antagonist, IL-4 receptor, IL-8 and TNF-α). Normal humal epidermal keratinocytes (NHEK) were pre-incubated for 6 hours in a medium containing Unisooth PN-47 at 0.4% or the JAK/STAT inhibitor Pyridone 6 at 5µM. They were then treated with a cytokine mix (oncostatin M, interleukin 17 and TNF-α) referred to as CTK mix for 24 hours. mRNA expression was determined by q-RT-PCR.

Result: Treatment with **Unisooth PN-47 at 0.4% inhibits cytokines and chemokines mRNA synthesis** by respectively -98% and -99% compared to CTK mix.



Efficacy

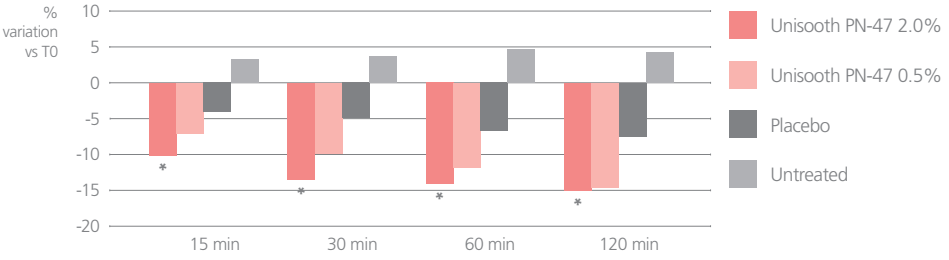
An instant effect on skin irritation (Clinical efficacy)

Unisooth PN-47 was tested versus a placebo at 0.5% and 2% for its ability to instantly reduce skin irritation. Skin irritation was induced by a 24h patch occlusion with a 2% sodium lauryl sulfate (SLS) aqueous solution on the skin. Erythema index (Mexameter® MX 18) and Trans-Epidermal Water Loss (Tewameter® 300) were evaluated after 15 min, 30 min, 60 min and 120 min.

Result: Treatment with a cream containing 0.5% and 2% of Unisooth PN-47 reduces SLS-induced TEWL. **After 15 min, Unisooth PN-47 at 2% decreases epidermis dehydration by -10%, and by -15% in 2 hours.**

*p<0.05 compared to placebo, Student's t Test

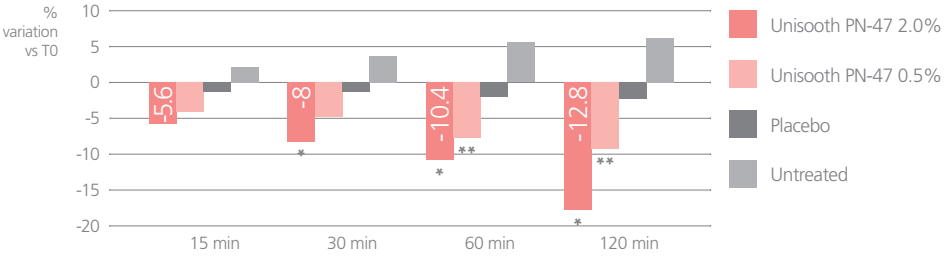
Reduction of epidermis dehydration (TEWL)



Result: Treatment with a cream containing 0.5% and 2% of Unisooth PN-47 reduces significantly skin redness. **After only 30 min with Unisooth PN-47 at 2% skin redness is significantly decreased by -8%, and by -13% after 120 min.**

*p<0.05/**p<0.01 compared to placebo, Student's t Test

Instant soothing effect (skin redness)



Summary

Technical information

INCI:	Panthenyl Triacetate, Naringenin
Origin:	Plant extract + Organic synthesis
Preservation:	Preservative-free
Appearance:	Clear, yellow liquid
Solubility:	Soluble in oils, alcohols, glycols
Dosage:	0.5-2%
Processing:	Can be added at the end of the formulation process under stirring or homogenizing. It can be heated for a short time with the oil phase of a formulation. Formulate at pH between 4.0 and 7.0 and temperature below 40°C.

Claims

Claims:	Instant soothing, control of skin irritation reactivity, daily protection against aggressions
Applications:	Sensitive skin care, calming cream, after sun lotion, after shave products, post depilatories cream, post laser spray, lotion for irritated scalp, cream for insect bite

Induchem AG
Industriestrasse 8a
CH-8604 Volketswil
T +41 44 908 43 33
F +41 44 908 43 30
sales@induchem.com

Induchem USA, Inc.
535 Fifth Avenue, Floor 23
New York, NY 10017, USA
T 212-756-9918
F 212-756-9942
salesusa@induchem.com

Induchem (France) SAS
5, place de la Pyramide
Tour Ariane – Etage 33
La Défense 9
F-92088 Paris La Défense Cedex
T +33 (0)1 55 68 12 23
F +33 (0)1 55 68 10 00
ventes@induchem.com

www.induchem.com

induchem
companies

cosmetic engineering

LEAFLET-PN47-05.12-1000