

Clinical Research Regarding GliSODin and Sun Exposure / UVB

GliSODin's benefits protecting cells against oxidative stress are also supported by three studies looking at the effects of sunlight and Ultraviolet Rays (UV) on the skin, inducing photo-oxidative stress.

The latest study, UV Study 3, accepted for publication by the European Journal of Dermatology in May 2007, was a randomized double-blind study with 50 participants. Using a UV light, researchers created photo-oxidative stress on the skin, causing a burn and measuring the change in the color of the skin (redness) on the inner-forearms of healthy subjects.

They conducted the UV stress test before starting supplementation with 500 mg of GliSODin or placebo, and repeated it each week for four weeks during supplementation. After using GliSODin, a significantly greater amount of UV exposure was required to create the redness and burn on the skin. This was not seen in the placebo group.

The researchers concluded that GliSODin appears to effectively help protect against oxidative stress resulting from exposure to the UV radiation, particularly for fair-skinned (phototype II) people.

UV Study 2 was an open clinical trial conducted by forty dermatologists in France. 150 volunteers were chosen based upon their susceptibility to flushing and burns and other oxidative stress reactions caused by exposure to the sun. The participants took 500mg of GliSODin daily over a 60 period, and did not change their sunbathing routine, including use of their regular sun screen (Index 20-100). This preliminary study suggests that the antioxidant properties of GliSODin may help support skin health against photo-oxidation by oxidative stress. The results of this study led to the double-blind clinical above.

UV Study 1 was a pilot trial with 15 patients that easily burn, have hypersensitivity to the sun or even problems of sun disease. 500 mg of GliSODin were administered per day for 60 days, and the patients reported their experiences with the product and sun exposure.

After three to eight weeks of normal sun exposure, the skin situation was very satisfactory in all volunteers. As opposed to the previous summers, they did not present sunburn, flushing or skin rash as would be normally expected. The results of this study led to the second trial.

UV Study 3 "Evaluation of the Effect of GliSODin on the Intensity of Actinic Erythema," M. Mac-Mary, J. Sainthillier, P. Creidi, J.P. Series, F. Vix, Ph. Humbert, presented at the CARD (Annual Congress of Dermatological Research) meeting in Brest, France, May 28th 2005

UV Study 2 "GliSODin and Exposure to the Sun," an open study conducted in France on 150 patients by 40 dermatologists following a protocol compiled by Catherine Laverdet, M.D., Nadine Pomarede, M.D. and Catherine Oliveres-Ghouti, M.D. Sponsored by ISOCELL Nutra, France. March 2005

UV Study 1 "GliSODin Sun pilot Trial," an open study conducted in France on 15 patients presenting fragile skin, hypersensitivity to the sun or even problems of sun disease, conducted by Catherine LAVERDET, MD, Dermatologist, Attachee de Consultation des Hopitaux de, Paris. July-September 2003

Evaluation of the Effect of GliSODin® on the Intensity of Actinic Erythema Induced with Radiation

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Introduction

GliSODin® has already demonstrated activation properties on the principal internal antioxidants, in particular Superoxide Dismutase (SOD), Catalase and Glutathione Peroxidase. The purpose of this trial was to assess its efficacy in solar prevention and protection.

Materials and methods

- 50 healthy subjects (10 phototype II, 20 phototype III and 20 phototype IV)
- Evaluation of the MED (Minimum Erythematous Dose) before and after 4 weeks of the daily administration of GliSODin or a placebo (Day 1 and Day 30)
- Monitoring of the actinic erythematous induced on the forearm (inside) of these subjects by chromametry (redness, a*) 24 hours after irradiation exposure (3 x MED) and then every week for 4 weeks (W0, W1, W2, W3, W4).
- Measurements completed by an analysis of the capillary network by videocapillaroscopy.

Results

- ↳ Increase in the MED in the GliSODin group, particularly in the light phototypes (II and III) (Figure 1)
- ↳ Faster reduction in redness with GliSODin® than with placebo (Figure 2).
- ↳ Faster increase in the capillary density than with the placebo (Figure 2).

Discussion

GliSODin® protects the cells against the negative effects of oxidative stress [1] by remaining active during intestinal passage [2], by activating the internal system of antioxidant enzyme defenses [3] and by limiting cell death resulting from oxidative stress. [4]. All of the results in this trial indicate the action of GliSODin® in solar protection. It would be interesting to test the efficacy of GliSODin® in this type of indication as a pre-treatment and to repeat the trial on a larger number of subjects, in particular on the light phototypes (II).

Références

- [1] MUTH CM, GLENZ Y, KLAUS M, et al. *Free Rad Res* 2004 ; **38** : 927-932.
- [2] VOULDOUKIS I, LACAN D, KAMATE C, et al. *J Ethnopharmacol* 2004 ; **94** : 67-75.
- [3] VOULDOUKIS I, CONTI M, KOLB JP, et al. *Res Trends – Curr Trends Immunol* 2003 ; **5** : 151-145.
- [4] VOULDOUKIS I, CONTI M, KRAUSS P, et al. *Phytoterapy Res* 2004 ; **18** : 957-962.

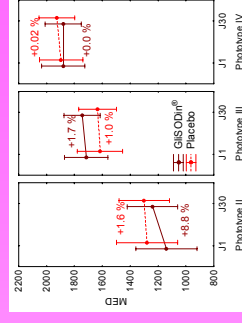


Fig 1. Evaluation of the MED as a function of time, phototype and treatment

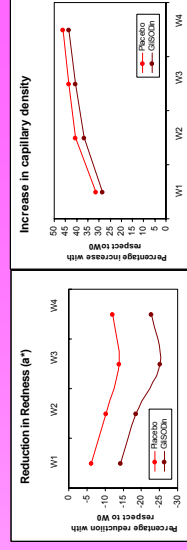


Fig 2. Evolution of redness and skin microcirculation as a function of time and treatment

UV Sun Study 3

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Presented on 27 and 28 May at the CARD (Annual Congress of Dermatological Research) meeting in Brest

Protocol:

- Randomised, double blind trial versus placebo
- 50 healthy subjects (25 receiving GliSODin capsules, 25 receiving placebo capsules).

Purpose:

To demonstrate the efficacy of GliSODin on the following parameters:

- Modification of the Minimum Erythematous Dose (MED*)
- Incidence on the induced actinic erythema in healthy subjects:
 - By demonstrating the intensity of the colour by chromometry
 - By observing the micro vascularisation by videocapillaroscopy

* The MED defines the susceptibility of the subject to sunburn, that is, in practice and mainly, ones sensitivity to UVB rays.

Inclusion Criteria:

- 10 phototypes II.
- 20 phototypes III.
- 20 phototypes IV.

Dosage/Length of Treatment:

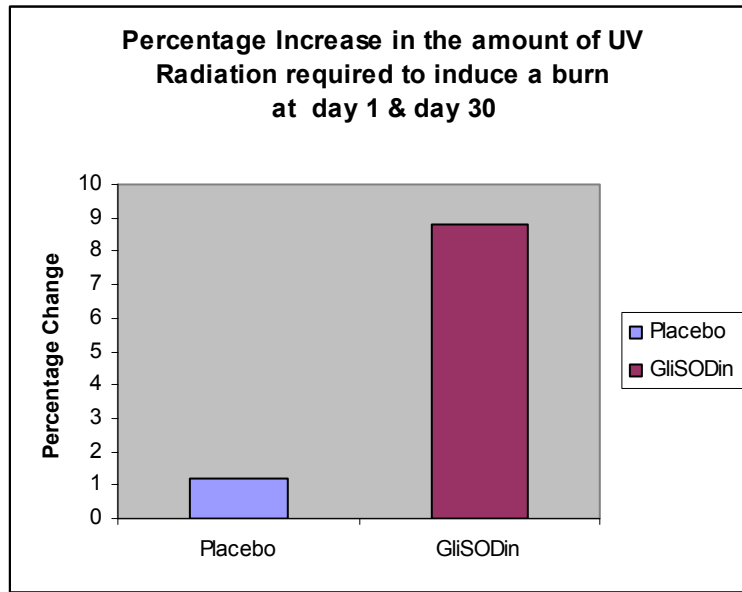
- 2 x 250 mg capsules per day (in the morning at breakfast) as of the **1st day of exposure**.
- Length of treatment: 4 weeks.

NB: the subjects continue to use their regular cleansing products but do not apply any cosmetic on the measurement site except for their usual shower gel or soap.

Results:

- **MINIMUM ERYTHEMATOUS DOSE:**

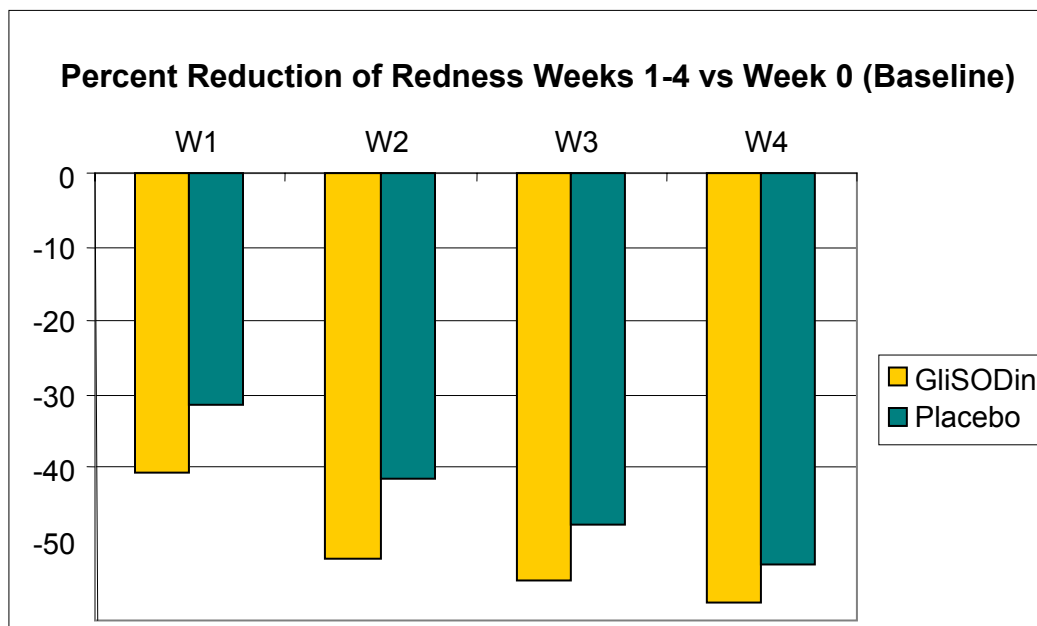
- GliSODin induced an increase in the MED in the phototypes II, 8 times greater than that of the placebo.



- **ACTINIC ERYTHEMA:**

- As a result, the redness induced by the actinic erythema decreased more quickly in the GliSODin group. Therefore, the increase in the number of capillaries assessed by videocapillaroscopy was higher in the GliSODin group.

ACTINIC ERYTHEMA



Conclusion:

The studies already published* have shown that GliSODin protects the cells by activating the internal antioxidant defence system that are necessary for the elimination of the free radicals produced by oxidative stress.

This study confirms the efficacy of GliSODin in the prevention of the consequences of oxidative stress resulting from exposure to the sun. This efficacy is of particular interest for phototypes II that represent a major part of the consultations in dermatology. In the GliSODin group, the MED increased, thereby resulting in a rapid reduction in actinic erythema as from the intake of the product. It would be interesting to develop this study by working on a larger number of phototypes II.

This study was presented on 27 and 28 May at the CARD (Annual Congress of Dermatological Research) meeting in Brest and will be published.

*** References:**

- 1) MUTH CM, GLENZ Y, KLAUS M, RADERMACHER P, SPEIT G, LEVERVE X. Influence of an Orally Effective SOD on hyperbaric Oxygen-related Cell Damage. *Free Rad Res* 2004; 38: 927-932.
- 2) VOULDOUKIS I, LACAN D, KAMATE C, COSTE P, MAZIER D, CONTI M, DUGAS B. Antioxydant and Anti-inflammatory properties of a cucumis melo extract rich in superoxyde dismutase activity. *J Ethnopharmacol* 2004; 94: 67-75
- 3) VOULDOUKIS I, CONTI M, KOLB JP, CALEND A, MAZIER D, DUGAS B. Induction of Th-1dependent immunity by an orally-effective melon SOD extract. *Res Trends – Curr Trends Immunol* 2003; 5: 151-145.
- 4) VOULDOUKIS I, CONTI M, KRAUSS P, KAMATE C, BLAZQUEZ S, TEFIT M, MAZIER D, CALEND A, DUGAS B. Supplementation with Gliadine-Combined Plant Superoxyde Dismutase Extract Promotes Anti-oxidant Defences and Protects against oxidative stress. *Phytoterapy Res* 2004; 18: 957-962.

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UV Sun Study 2

GliSODin and exposure to the sun.

Catherine Laverdet, M.D., Nadine Pomarede, M.D. and Catherine Oliveres-Ghouti, M.D.

March 2005

Open study sponsored by ISOCELL Nutra, France.

Open study sponsored by ISOCELL Nutra, France. Conducted in France on 150 patients by 40 dermatologists following a protocol compiled by Catherine Laverdet, M.D., Nadine Pomarede, M.D. and Catherine Oliveres-Ghouti, M.D.

Protocol:

150 patients (120 women + 30 men).

Inclusion criteria:

- Sensitive, dry or reactive skin.
- Readily irritated, fair skin.
- Hypersensitivity to sunshine, even UV radiation-induced, cutaneous pathology.

Duration of treatment and dosage:

- Patients took Glisodin for at least 15 days before their holidays: 2 x 250 mg capsules per day.
- The same dosage was maintained throughout the holidays.
- Patients sunbathed as usual and continued to use their regular sun screen (Index 20 to 100).

Results:

Clinical Evaluation

Clinical Results Day 0

Enrolled patients were split into three different groups:

- Group 1: 75 patients who suffer flushes as soon as sun exposure begins or following more or less serious sunburns.
- Group 2: 60 patients who experience LEB-type sun allergic reactions.
- Group 3: 15 patients with other reactions such as pruritus, solar eczema and rashes.

Clinical Results Day 60

After 4 to 8 weeks, outcomes were as follows:

- Group 1: of the 75 patients, 64 had no sunburn; 6 had diminished episodes and 5 had had a full-blown episode of sunburn.

- Group 2: of the 60 patients, 44 did not experience any LEB-type reaction; 6 had an attenuated reaction and 10 had had a full-blown reaction.
- Group 3: none of the 15 patients suffered the usual symptoms.

From the patient's point of view:

- 110 patients judge that their skin was well prepared for exposure to the sun.
- 76 patients judge that they tanned more with less exposure to the sun.
- 62 patients judge that taking Glisodine speeds up the tanning process.

General Condition on Day 60

Eighty-eight patients declared their quality of life to have been improved. The most commonly mentioned criteria were:

- Increased vitality (61)
- Higher quality sleep (48)
- Increased wakefulness (22)
- Attenuated muscle pain (34)
- Improved memory and concentration (29)
- Quicker recovery following physical exercise (29)

Conclusion:

A first study conducted in 2003 by Dr. Laverdet in 15 patients had shown Glisodin to be effective in patients who experience sun-induced skin reactions. This much larger-scale study - conducted in 150 patients by 40 dermatologists spread throughout France - shows that Glisodin (at a dosage of 2 capsules a day beginning 15 days before sunbathing and throughout the holidays) prepares the skin for exposure to the sun and undeniably improves the condition of both the patient's skin and general condition.

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UV Sun Study 1

GLiSODin sun sensitivity pilot trial.

Catherine LAVERDET, MD, Dermatologist

July-September 2003

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GLiSODin TRIAL

(July-September 2003)

The study was carried out on 15 patients (11 women and 4 men), 25 to 67 years old, presenting fragile skin, hypersensitivity to the sun or even problems of sun disease. 2 capsules (250 mg) of GLiSODin were administered per day for 2 months. For preventive purposes, the treatment began 15 days before sun exposure.

The criteria for non inclusion were respected:

- no known allergic diathesis (besides possible sun allergy)
- no topical treatments (corticoids...)
- no treatment with general administration in progress (antihistaminics...)

The population characteristics:

None of the patients presented a profession at risk (allergenic or toxic contacts) or disease in progress.

The clinical assessment on Day 0 indicated:

- The past solar history:
 - flush as of the first exposure
 - sunburn more or less accompanied by pruritus
 - LEB type sun allergy
 - seborrheic dermatitis of the face associated with erythema

- Habits in the sun:

During the trial, the patients maintained their habits in the sun with regards to their means of protection (index from 30 to 100), their time of exposure (from 18 to 60 days of strong sunshine, then normal sunshine the other days), or their place of vacation (sea or mountain)

- The state of the skin:
 - sensitive or dry skin
 - fair skin, easily irritated
 - erythema or blotchiness

The clinical assessment at Day 60:

After 3 to 8 weeks of intense sunshine, the skin situation was very satisfactory in all volunteers.

As opposed to the previous summers, they did not present:

- sunburn
- flush
- pruritus
- allergic rash

General state on Day 60:

As regards the “quality of life”, the 15 patients felt a general well-being that they qualified as “good condition” without being able to describe the different symptoms.

The questioning specified:

- an improvement in the quality of sleep in 6 patients
- a reduction in articular and muscular pain in 8 patients
- a better ability to concentrate in 7 patients and an increase in memory in 3 patients
- faster recovery after athletic exertion in 5 patients
- an increase in visual acuity in 3 patients

Conclusion:

In conclusion, the GliSODin trial carried out for 2 months with 2 capsules per day in 15 adult patients was fully satisfactory. The results demonstrated undeniable cutaneous and general comfort.

All of the patients expressed a desire to continue the treatment.