



## **OAT BETA GLUCAN**

### **VP-9966.000W**

Oat Beta Glucan is a clear, light yellow liquid that is derived from whole oats and can be described as a linear biopolymer, consisting of glucose molecules linked together in a particular fashion. Beyond Oat's historic & folkloric uses for relieving skin maladies, research indicates that Oat Beta Glucan is capable of both penetrating deep into the skin and delivering significant topical skin benefits. It has been shown to work as an Anti-Irritant providing rapid relief of itching & pain associated with minor skin irritations and speeds up the skin's Wound Healing process including partial thickness burns through several mechanisms including the stimulation of Collagen Synthesis, activation of Immuno-Stimulation and so forth. Oats and its derivatives have a long history of safe use in both skin care products and dermatology. Beta Glucans are found in various natural sources, with Oats being the most abundant.

Vege Tech Oat Beta Glucan is very effective in preventing and / or reducing the presence of sunburn cells in human skin when exposed to UVA. When combined with sunscreens, it clearly offers enhanced Photoprotection against UVA damage by inhibiting the formation of Sunburn Cells, and therefore offers Anti-Aging benefits. Due to its Film-Forming Moisturizing properties, its ability to work through the Inter-Cellular Lipid Matrix, and enter the lower levels of the skin, the appearance of Fine Lines & Wrinkles are diminished.

### **FEATURES & BENEFITS**

- Stimulates Collagen Synthesis
- Immuno-Stimulant
- Wound Healing
- Anti-Irritant
- Film Former & Moisturizer
- Anti-Aging
- Skin Soothing Agent
- UVA Protection

## **COLLAGEN STIMULATION ASSAY**

### **PURPOSE:**

The objective of the test was to determine the effect of Oat Beta Glucan test material on fibroblast collagen (Type I) production using neonatal human fibroblasts.

### **TEST METHOD:**

Soluble collagen levels were determined using an enzyme-linked immunosorbant assay (ELISA). Culture supernatants were incubated with an antibody that specifically recognizes Type I collagen. A color reaction was carried out using p-nitrophenyl phosphate as substrate and determining optical densities at 405 nm.

### **RESULTS:**

Oat Beta Glucan appears to be a very strong stimulator of collagen at varying concentrations of 0.1%, 0.3%, and 1%. The effect at 1% is extremely strong and indicates very high activity of collagen production.

The collagen stimulation of test material at 0.1% was greater than the control magnesium ascorbyl phosphate (MAP) and transforming growth factor (TGF) with MAP. These control effectors which are known stimulators of collagen production by fibroblasts.

### **REFERENCE:**

“Extracellular Matrix Protein Synthesis Assay” report dated November 2, 1995 by Collaborative Laboratories.

### **CONCLUSION:**

Test material Oat Beta Glucan is highly effective in stimulation of Type I Collagen when used at 0.1% - 1% concentration.

## **Evaluation of Oat Beta Glucan to Protect Human Skin against Sunburn Cell Formation Resulting from UVA**

### **Purpose:**

Oat containing materials have been purported to act as skin protectants and particularly Oat Beta Glucan have been shown to protect the skin against the appearance of sunburn cells.

This study was undertaken to determine if Oat Beta Glucan has the ability to protect the skin against UVA damage, since there are few effective UVA sun protectants available for use in the U.S.A.

### **Test Method:**

Six healthy humans (skin types II and III) were used for this study. The minimal phototoxic dose (MPD) was determined for each subject using 8-Methoxypsoralen (MOP) and UVA.

Test materials and MOP were applied to the backs of human subjects and compared to a positive control site that only received MOP and no test material. These areas received 2x the MPD of UVA.

Twenty four (24) hours after UV exposure skin punch biopsies were taken from all treated sites as well as un-irradiated sites. Quantification of sunburn cells (SBC) was conducted using microscopic examination.

Test materials contained varying chemical and physical (UVA and UVB) sunscreens with and without Oat Beta Glucan (1%) and Oat Beta Glucan-2 (5%) material.

### **Summary:**

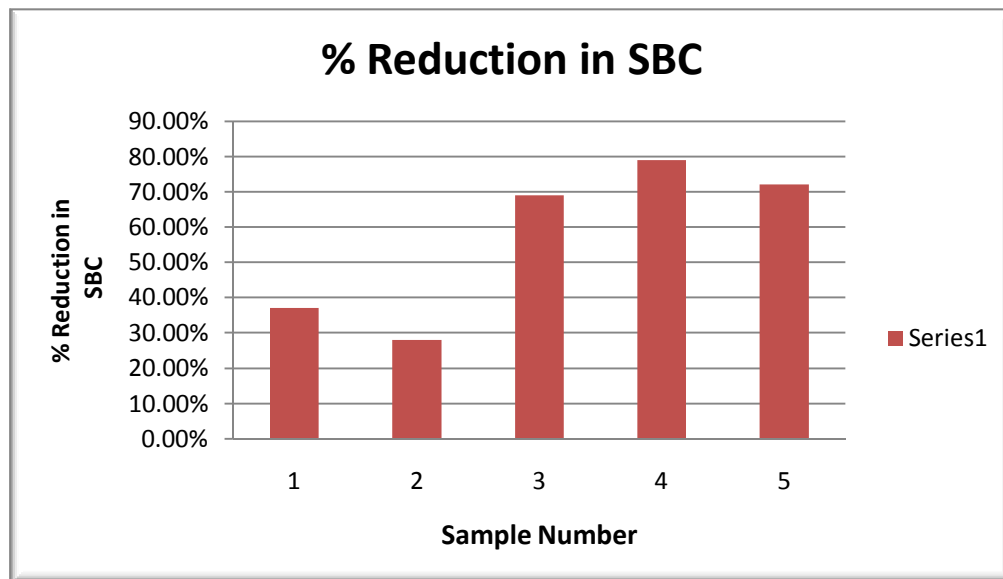
Oat Beta Glucan was very effective in preventing and or reducing the presence of sunburn cells in human skin when exposed to UVA.

Pretreatment of skin with sunscreens was not as effective as sunscreens with Oat Beta Glucan in preventing the presence of sunburn cell formation in human skin.

Oat Beta Glucan when combined with sunscreens clearly offers added photoprotection against UVA damage in inhibiting the formation of sunburn cells (SBC).

### SBC INHIBITION IN HUMAN SKIN TREATED WITH UVA AND MOP

SAMPLES						
	1	2	3	4	5	Untreated + Control
Octyl Methoxycinnamate	2%	2%	2%	2%	2%	-
Oxybezone	2%	-	2%	-	-	-
Zinc Oxide	-	1%	-	1%	1%	-
Oat Beta Glucan	-	-	1%	1%	1%	-
Oat Beta Glucan -2	-	-	-	-	5%	-
MEAN SBC PRODUCTION	3.24	3.69	1.62	1.10	1.44	5.14
% REDUCTION IN SBC	37	28	69	79	72	N/A



## **Discussion of Results:**

### **Test Samples #1 and 2:**

The use of sunscreens (UVA and UVB) gave moderate reduction in SBC compared to untreated positive control.

### **Test Samples #3, 4 and 5:**

The use of Oat Beta Glucan at 1% and Oat Beta Glucan-2 at 5% with sunscreens provided significant photo-protection against SBC formation as compared to formulas #1, 2 and positive control.

These differences in activity are significant at 95% confidence level.

## **Human Stinger Testing**

### **Objective:**

This study was conducted to evaluate the potential of Oat Beta Glucan (Irritation Reduction Complex) to reduce the burning and stinging of Lactic Acid (5%) in human subjects.

### **Study Design & Method:**

Five (5) subjects (age 18-50) used each test material.

The volar forearm skin of each subject was scarified and then after a brief rest period the test materials were applied.

Subjects rated each product for pain response (burning and stinging). Only subjects that responded to the positive control (5% Lactic Acid) were allowed to continue participation in the study.

The assay used was the “Scarified Skin Stinger Assay”.

## Test Materials:

Lactic Acid 5%	Sample ID #69-42-2
Lactic Acid 5% + Oat Beta Glucan 1%	Sample ID #69-39-2
Lactic Acid 5% + Oat Beta Glucan 2.5%	Sample ID #69-40-2
VEHICLE (No Lactic Acid, No Oat Beta Glucan)	Sample ID #69-43-1

## Summary of Results:

Test Materials	Scarification Index (Avg. 5 Subjects)
Lactic Acid 5%	100
Lactic Acid 5% + Oat Beta Glucan 1%	64
<b>Lactic Acid 5% + Oat Beta Glucan 2.5%</b>	<b>41.4</b>
VEHICLE (No Lactic Acid, Oat Beta Glucan)	0

## Discussion of Results:

Based on data the most effective material in preventing burning and stinging from Lactic Acid is Oat Beta Glucan at 2.5%.

The VEHICLE does not cause any burning and stinging. There is a good dose response in this study.

<b>INCI:</b>	<b>CAS #:</b>	<b>EINECS/ELINCS:</b>	<b>JIC:</b>
Beta-Glucan	53238-80-5 55965-23-6 160872-27-5	258-443-2 310-127-6	N/A

**Suggested Use Levels:** 0.1% - 5%

**pH:** 6 - 8

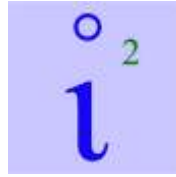
**Packaging:**

Vege Tech Oat Beta Glucan is available in the following standard sizes:

- Sample size (2 fl. oz.)
- 8 lbs. (1 gal.)
- 40 lbs. (5 gal. pail)
- 240 lbs. (30 gal. drum)
- 400 lbs. (55 gal. drum)
- 2,200 lbs. (275 gal. tote)

**Shelf Life:** 1 year @ 25° C (77° F). Protect from freezing.

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