The Original Producers of *Meadowfoam Seed Oil*™

Natural Plant Products

DAIKON SEED EXTRACT
INCI NAME (PCPC):
Raphanus Sativus (Radish) Seed Extract
INCI NAME (EU):
Raphanus Sativus Seed Extract
CAS NUMBER: 84775-94-0
EC NUMBER: 283-918-6
JCLD: 561590
GROWN IN USA

MEADOWFOAM SEED OIL
INCI NAME (PCPC):
Limnanthes Alba (Meadowfoam) Seed Oil
INCI NAME (EU):
Limnanthes Alba Seed Oil
CAS NUMBERS: 153065-40-8, 169107-13-5
EC NUMBER: 604-884-4
JCLD: 552440 JSQI: 521124
PRODUCT OF USA

An Assessment of Natural Emollients' Ability to Improve Skin Barrier Function

Ingredient Background:

Meadowfoam Seed Oil (MSO)* is a fully refined triglyceride composed of approximately 95% fatty acids with chain lengths of 20 carbons or more. The oil is a light-colored, odor free product prized for its exceptional oxidative stability and functionality in a wide range of cosmetic and personal care formulations.

Daikon Seed Extract (DSE) is a fully-refined triglyceride derived from the seeds of Raphanus sativus grown in the Willamette Valley of Oregon. DSE imparts a delicate skin feel and emolliency, and its aesthetics differ qualitatively from other botanicals.

**Meadowfoam Seed Oil XPR and Meadowfoam Seed Oil can be used interchangeably.*

Objective:

To evaluate the ability of MSO and DSE to improve skin barrier function in comparison to two well-known emollients used in skin care.

Number of Subjects:

Twenty-seven

Test Area:

Volar forearm

Test Products:

Daikon Seed Extract, Meadowfoam Seed Oil, 100 cps dimethicone, and isopropyl palmitate (IPP).

Endpoint:

Trans-Epidermal Water Loss (TEWL)

A reduction in trans-epidermal water loss indicates measured increase in skin barrier function.

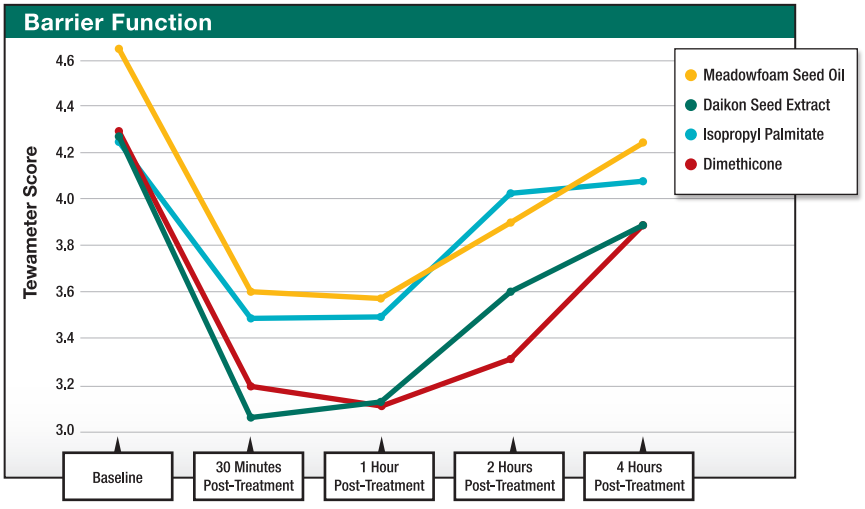
Instrument:

DermaLab Evaporimeter (Cortex Technology, Hadsund, Denmark)

Mean Tewameter Score

	Meadowfoam Seed Oil	Daikon Seed Extract	Isopropyl Palmitate	Dimethicone
Baseline	4.67	4.25	4.13	4.3
30 Minutes Post-Treatment	3.6	3.07	3.45	3.2
1 Hour Post-Treatment	3.57	3.13	3.46	3.12
2 Hours Post-Treatment	3.9	3.6	4.02	3.32
4 Hours Post-Treatment	4.24	3.87	4.07	3.87

Barrier Function



Methodology:

After a three day washout on forearms with neutral soap bar and no usage of personal care products on the test sites, subjects reported to the testing facility. The testing facility was maintained at 20-22° C and 30-50% relative humidity. Four test sites measuring 4x4 cm were demarcated on the volar forearms at least 2 cm from the wrist and elbow, with at least 2 cm between adjacent test sites.

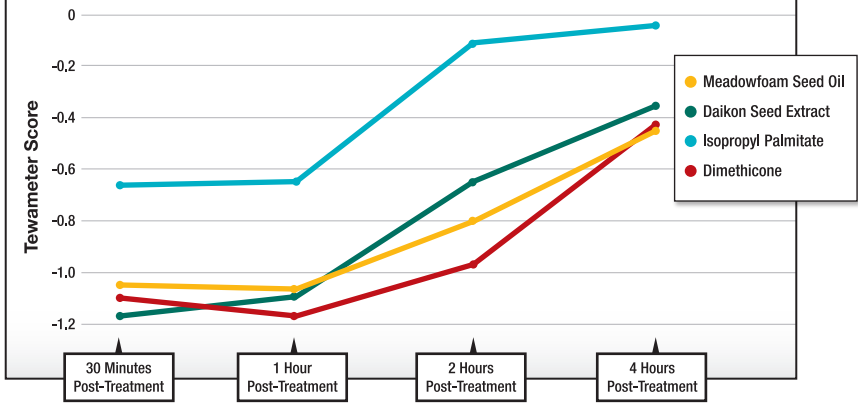
After test site demarcation, subjects remained in the testing facility with the test sites uncovered and exposed for 15 minutes. After this equilibration period, a baseline measurement was taken at each test site. Trained clinical staff then applied 1 mg/cm^2 of a test product to the test sites using a finger cot. Products were assigned to test sites using a randomized design with each subject having all four products applied.

Subjects remained in the test area with the test sites uncovered and exposed for 30 minutes at which point the first TEWL measurement was taken. Participants were sequestered in the testing facility for the balance of the study, and TEWL measurements were taken at 1 hour, 2 hours, and 4 hours post-application after allowing participants to equilibrate for 15 minutes in the measurement room.

Mean Tewameter Score

	Meadowfoam Seed Oil	Daikon Seed Extract	Isopropyl Palmitate	Dimethicone
30 Minutes Post-Treatment	-1.07	-1.18	-0.68	-1.1
1 Hour Post-Treatment	-1.1	-1.12	-0.67	-1.17
2 Hours Post-Treatment	-0.77	-0.65	-0.11	-0.97
4 Hours Post-Treatment	-0.44	-0.38	-0.06	-0.43

Barrier Function Mean Difference from Baseline



Statistical Analysis:

Mean reduction in TEWL from baseline was calculated for each treatment. The data were subjected to a two-tailed paired t-test with significance set at a p-value of 0.05. Treatments were compared to the untreated baseline and against other treatments.

TEWL (Barrier Function) Results:

DSE, MSO, and 100 cps dimethicone significantly reduced TEWL at 30 minutes, 1 hour, 2 hours, and 4 hours post-application compared to the baseline. IPP significantly reduced TEWL at 1 hour and 2 hours post-application. The performance of DSE was significantly different from the performance of IPP at the 30 minute, 1 hour and 2 hour marks.

Conclusions:

Both MSO and DSE decreased TEWL. DSE significantly increased barrier function compared to isopropyl palmitate at all measurement points during the study. This demonstrates the enhanced utility of both MSO and DSE that can be achieved while maintaining the light skin feel associated with IPP.

There was no statistical difference in performance between DSE, MSO, and 100 cps dimethicone demonstrating that both MSO and DSE perform comparably to well-known cosmetic emollients.

Phone: (503) 363-6402
Fax: (503) 587-8717
Email: sales@meadowfoam.com

P.O. Box 4306
Salem, OR 97302 USA

www.meadowfoam.com