

# Desert Milk™

Powered by the Desert to Moisturize and Restore Your Skin



**PRODUCT:** Desert Milk™

**INCI NAME:** Water (and) Simmondsia Chinensis (Jojoba) Seed Oil (and) Adansonia Digitata Seed Oil (and) Citrullus Lanatus (Watermelon) Seed Oil (and) Propanediol (and) Aloe Barbadensis Leaf Juice (and) Phospholipids (and) Adansonia Digitata Fruit Extract (and) Glycerin (and) Sodium Hyaluronate (and) Xanthan Gum

**EINECS #:** 231-791-2, 289-964-3, 294-680-8, 290-802-9, 207-997-3, 305-181-2, N/A, 294-680-8, 200-289-5, 232-678-0, 234-394-2

**CAS #:** 7732-18-5, 90045-98-0, 91745-12-9, 90244-99-8, 504-63-2, 94349-62-9, 123465-35-0, 91745-12-9, 56-81-5, 9067-32-7, 11138-66-2

Preservative System: Glyceryl Caprylate (and) Glyceryl Undecylenate

## KEY BENEFITS

- Lightweight Feel
- Milky Texture
- Micro-droplets for Improved Delivery
- Fast Absorbing
- Non-Greasy
- Helps to Reduce Shine
- Conditioning, Softening & Smoothing
- Naturally Derived
- Easy to Use
- Helps Incorporate Oils into Cleansing Systems

## IDEAL FOR USE

- Creams, Lotions & Cream-gels
- Serums
- Foundations & Primers
- Men's Care
- After-Sun Care
- Boosters/Enhancers
- Spray-able Formulations
- Cleansers
- Cold Process Formulations

## WHAT IS DESERT MILK™?

**Desert Milk™** is a stable, low viscosity, oil-in-water emulsion prepared with a unique ultrasonic cavitation process in combination with a plant-based, biomimetic phospholipid. **Desert Milk™** features a group of carefully selected oils and extracts such as the fruit extract and seed oil from the Baobab tree, seed oil from the Kalahari Melon, **Desert Whale Jojoba Oil**, and Aloe Vera leaf juice. All of these plants have developed a sophisticated system of survival in extreme environmental conditions.

Having a significantly smaller particle size than a standard emulsion, in the range of 100-1000nm, the micro-droplets formed have more surface area, allowing for increased interaction with skin and better penetration of its ingredients.

## WHAT DOES DESERT MILK™ DO?

The micro-droplets contained within **Desert Milk™** have a large surface area, absorbing easily into the skin, improving topical delivery and providing an overall lightweight feel. The inclusion of the various oils, extracts and the plant-based phospholipid promote hydration, conditioning, softening and smoothing while helping to maintain healthy barrier function with anti-inflammatory and anti-aging properties.

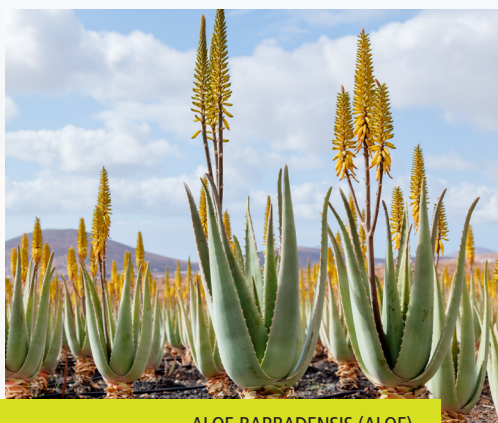
The special phospholipid used in **Desert Milk™** has also been shown to regulate specific genes and pathways that are responsible for cell regeneration, keratinocyte differentiation and proliferation, skin tissue hydration and inflammation, helping to bring the skin back into balance. The utilization of this phospholipid also aids in the structuring and stabilization of the emulsion.



VANTAGE MILKS



CITRULLUS LANATUS (KALAHARI MELON)



ALOE BARBADENSIS (ALOE)



SIMMONDSIA CHINENSIS (JOJOBA)

## THE CONCEPT

Plants from various types of deserts have found remarkable ways to survive and thrive in harsh environments by evolving mechanisms that provide restorative and regenerative properties. These valuable properties allow the plants to endure the most extreme dry periods and continue to flourish. By using oils and extracts from a variety of these plants, **Desert Milk™** helps provide these same benefits to the skin. The components of **Desert Milk™** include fruit extract and seed oil from the Baobab tree, seed oil from the Kalahari melon, Desert Whale Jojoba Oil, and Aloe Vera leaf juice.

Native to the African savannah, the baobab tree (*Adansonia digitata*), regarded as a symbol of life and positivity, is vital to the livelihood of rural communities as an important source of food, shelter, fiber and medicine. By absorbing and storing water in its trunk during the rainy season, the baobab tree produces nutrient-dense fruit in the dry season. This super fruit is high in antioxidants and Vitamin C, while the oil contains Omegas -3, -6 and -9 fatty acids.



ADANSONIA DIGITATA (BAOBAB)

An ancestor of the common watermelon, the Kalahari Melon (*Citrullus lanatus*) is a vine-like flowering plant that grows across the Kalahari Desert and is highly adapted to surviving drought and harsh light. While the Kalahari Melon has been used as an important source of drinking water for travelers, the seed oil is also packed with phytosterols, essential fatty acids (especially Omegas-6 and -9) and is known to dissolve excess sebum on the skin.

Believed to have originated in Africa and the Arabian Peninsula, Aloe Vera (*Aloe barbadensis*) is a cactus-like succulent with thick, water-retaining leaves adapted to very dry desert conditions. Commonly used for its healing and cleansing properties, Aloe Vera contains a variety of vitamins, minerals, and other nutritional substances that work together to soothe the skin.

**Desert Whale Jojoba Oil** is a nourishing liquid wax ester derived from the seed of the jojoba shrub (*Simmondsia chinensis*), a plant indigenous to the Sonoran Desert. Native cultures have used Jojoba for centuries on their skin and hair by crushing the seeds to release the oil. Desert Whale Jojoba Oil is rich in Omega-9 fatty acids, fatty alcohols, Vitamin E and phytosterols and offers intense hydration, conditioning and emollient properties.



## TYPICAL PROPERTIES OF DESERT MILK™

Appearance	White to Off-White Liquid
Odor	Characteristic
Specific Gravity	0.93 – 0.97
Viscosity (cps)	1,500 – 4000
Recommended Use Level	1 – 100%

### Skin-Renewing & Regenerating Properties

**Results obtained via WNT signaling pathway PCR array, a gene expression study that helps identify a product's mechanism of action (in-vitro):**

Desert Milk™'s phospholipids stimulate genes involved in skin cell renewal, skin cell turnover, skin regeneration, and other natural skin processes.

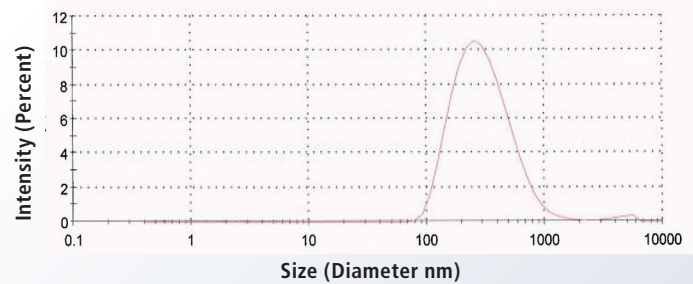
**PCR modulation of WNT pathway genes with the phospholipid in DESERT MILK™, compared to control (without the phospholipid)**

Gene Code	Fold Regulation vs. Control	Comments
FZD8	7.3	Frizzled 8 (FZD8) decreases with age in progenitor cells. Its upregulation may "rejuvenate" these cells, making them more capable of tissue regeneration (Brunt et al., 2012)
FRAT1	3.6	Activator of WNT canonical signaling through inhibition of GSK-3.
JUN	2.4	JUN is a target of WNT canonical pathway. JUN is an early differentiation marker (Blatti & Scott, 1992; Murray et al., 2013) and an effector of TGF-β – a key effector in skin homeostasis.
SFRP1	2.2	SFRP1 Induces differentiation, inhibits proliferation of epithelial cells and negatively regulates WNT pathway.
WNT10A	2.1	Induced by TGF-β. Activator of WNT/β-catenin signaling. WNT10A, in addition to the formation of teeth and hair follicles, is of importance for the formation of nails, regeneration of the epidermis, papillae of the tongue and sweat gland function. Loss of function results in dry skin, abnormal hair patterns and nail malformations (Nawaz et al., 2009).
FZD2	2.0	Increased in differentiated tissues (Choi et al., 2008). Accordingly, Frizzled 2 (FZD2) increases the intracellular Ca <sup>++</sup> level, consistently with the role of this ion in keratinocyte differentiation (Niu et al., 2012).
WNT7B	2.0	WNT7B plays an important role in stem cell homeostasis and in the tissue repair and regeneration (Lin et al., 2010; Kandyba et al., 2013).
KREMEN1	-2.1	This encoded protein is a component of a membrane complex that modulates canonical WNT signaling.

## HOW CAN DESERT MILK™ BE USED?

**Desert Milk™** is stable, versatile and easy to use, suitable even for sprayable and cold process formulas. When used at 100%, this milk can be packaged as a milky facial serum or as a booster for consumers to mix with their existing beauty products. To use in a formulation, it should be mixed in post-emulsification, post-neutralization or as a final step at temperatures below 35°C. When used as a base, compatible water-soluble actives and fragrances can be added at room temperature, creating a customizable product offering. High shear mixing should not be used during or after incorporation of **Desert Milk™**. The ideal pH range for systems containing **Desert Milk™** is between 4.0 – 8.0. It may be incompatible with certain cationic ingredients.

### Micro-Droplet Size - Particle Size Distribution



### DATA

#### DESERT MILK™ PANEL STUDY

In a panel study where Desert Milk™ was applied directly to the face after cleansing for three consecutive days of 17 participants (male and female, ages 20 - 60):

- 100% agreed the product applied smoothly to the face.
- 94% felt the product absorbed well into the skin.
- 94% reported his/her face felt moisturized upon the first application.
- 100% agreed his/her face felt comfortable after application.
- 82% reported his/her skin looked smoother after 3 days of application.



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