



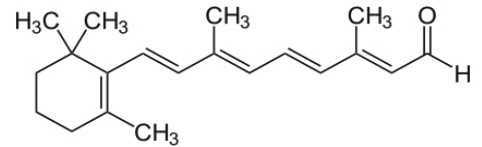
HYDROXYSOMES[®] RETINALDEHYDE

Next Generation Bioactives



LABORATORY SKIN CARE[®], INC. (LSC) has developed a novel method for co-engineering retinaldehyde (retinal) with its patented Hydroxysomes[®] Dermal Delivery Platform.

Retinaldehyde is a direct precursor to retinoic acid providing the same therapeutic benefits as retinoic acid while eliminating skin irritation. However, it is highly unstable in its pure form. Hydroxysomes[®] stabilizes retinaldehyde for use in topical formulations.



Retinoids are natural antioxidants, improving skin texture by enhancing its firmness and thickness.

Its natural metabolic pathway in the body is as follows:



- Topical application of retinoic acid and retinol only delivers 2% of the retinoids into the skin¹
- The remaining retinoic acid / retinol pool remains on the skin causing irritation
- Retinaldehyde is 20x more potent than retinol, and it is not irritating

KEY ADVANTAGES OF HYDROXYSOMES[®] RETINALDEHYDE

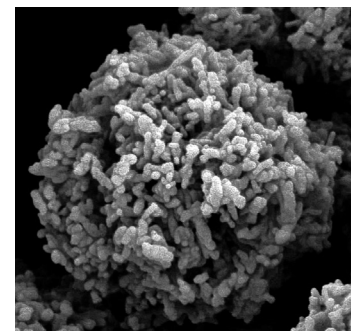
• RETINALDEHYDE AND CALCIUM DELIVERY	• HIGHLY STABLE	• SUSTAINED RELEASE
• STIMULATES COLLAGEN & ELASTIN SYNTHESIS	• NON-IRRITATING	• SKIN REJUVENATION

ADDITIONAL BENEFITS OF HYDROXYSOMES[®] RETINALDEHYDE

Hydroxysomes[®] Retinaldehyde also delivers calcium to the skin which enhances the effect of retinaldehyde. Delivering retinaldehyde and calcium simultaneously provides integrated anti-aging properties for younger looking skin.

ANTI-AGING EFFECTS OF CALCIUM

According to clinical study, calcium restores the skin's normal balance by repairing the barrier function and maintaining the barrier integrity of stratum corneum (SC). A healthy skin barrier improves firmness, cellular cohesion, and hydration, allowing skin's youthful appearance. Calcium plays a significant role in skin differentiation, which reduces the appearance of fine lines and wrinkles.



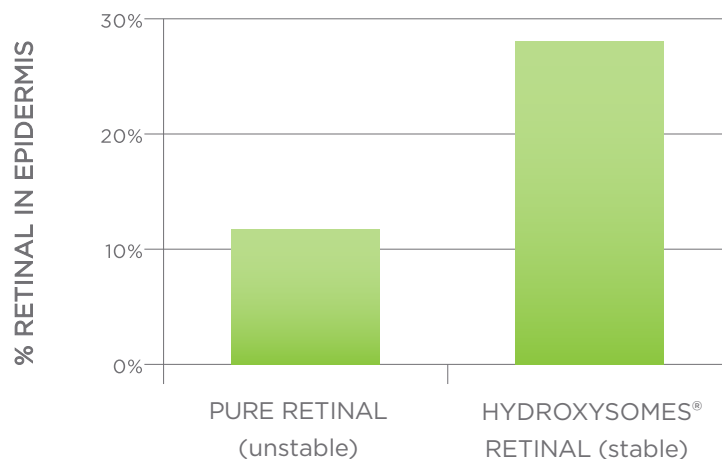
Hydroxysomes[®] Particle SEM 18,000x

References: 1. Saurat, J.H., Sorg, O., Dermatology 1999; 199(suppl 1):1-255(8):1129-41.

HYDROXYSOMES® RETINALDEHYDE DERMAL DELIVERY

Hydroxysomes Retinaldehyde delivers stable retinaldehyde into the stratum corneum and epidermis. Notwithstanding the instability issue of retinaldehyde, more retinaldehyde penetrates the epidermis when delivered with Hydroxysomes than the standard control using retinaldehyde alone in the same formulation. The comparison was conducted with flow-through diffusion cells using human skin over a 24 hour treatment period (Figure 1). Additionally, some retinaldehyde was observed in the dermis from the Hydroxysomes Retinaldehyde formulation, but no retinaldehyde was observed in the dermis from the same formulation with retinaldehyde.

Fig. 1
Tissue: Human skin
Vehicle: Topical Formulation
Analysis: HPLC



FORMULATION STABILITY:

Several formulations with Hydroxysomes® Retinaldehyde were stable at room temperature for 24 months, and at 40° C for three months, and at 50° C for one month. No change in bioactivity, pH, color, appearance, or viscosity was observed. Retinaldehyde active assay confirmed % activity as per specifications on C of A.

PRODUCT SPECIFICATIONS

INCI NAME:	HYDROXYAPATITE, RETINAL
ACTIVE LOAD:	15 ± 2.0% RETINALDEHYDE
APPEARANCE:	POWDER
COLOR:	LIGHT YELLOW
ODOR:	ODORLESS
AVERAGE PARTICLE SIZE:	< 10 µm
STORAGE CONDITIONS:	ROOM TEMPERATURE (AVOID LIGHT AND HUMIDITY)
SHELF LIFE:	24 MONTHS
SOLUBILITY / COMPATIBILITY:	FREELY DISPERSIBLE IN ALL TYPES OF WATER AND OIL-BASED COSMETIC FORMULATIONS
RECOMMENDED USAGE:	0.07 - 0.7% HYDROXYSOMES RETINALDEHYDE (0.01 - 0.1% RETINAL)
FORMULATION GUIDELINES:	ADD BELOW 40°C AT pH ≥ 5.5
PACKAGE SIZE:	1 Kg
CATALOG NUMBER:	200130

