

# CELLUCAP<sup>™</sup> – C

A Multi Functional “Green” Encapsulated  
Ascorbyl Tetraisopalmitate, a Lipophilic Derivative  
of Vitamin C, for Anti-Aging and Skin Brightening



**Leader in Microencapsulation Technology**

# CELLUCAP™ - C

Even skin tone and complexion is a fundamental conception that defines beauty in all cultures. The cosmetic industry strives to develop products that meet consumers desires. For decades, Vitamin C has been the most popular and ideal ingredient in the cosmetic industry due to its ability to enhance uniform skin complexion and fight wrinkles. Vitamin C has been proven to increase cell renewal, reduce the appearance of fine lines/wrinkles and prevent moisture loss. Vitamin C is well known for its excellent brightening properties stemming from its ability to inhibit melanogenesis, suppress intracellular Tyrosinase and prevent transporting of melanin to the upper dermis (keratinocytes). Nevertheless, Vitamin C is challenging to formulate with, since it can easily get oxidized, leading to a loss of activity.

**CelluCap™- C** is Tagra's innovative and effective solution to overcome Vitamin C formulation challenges. Cellucap™- C is a "green" microencapsulation delivery system, loaded with 25% of Ascorbyl Tetraisopalmitate\*, exhibiting an average particle size of ~30 micron and composed from a cellulose based polymer. **CelluCap™- C** is employing Tagra's Release on Demand™ (RND™) technology, releasing the potent Vitamin C upon application, while rubbing the formulation onto skin (Fig. 1). The polymeric shell collapses, releasing the encapsulated active. Microcapsules break down into invisible particles, but still retain some of the core ingredients to continue and deliver over time.

\* A lipophilic derivative of Vitamin C, known also as Tetrahexyldecyl ascorbate, which exhibits excellent percutaneous abilities converting into free Vitamin C within the cells

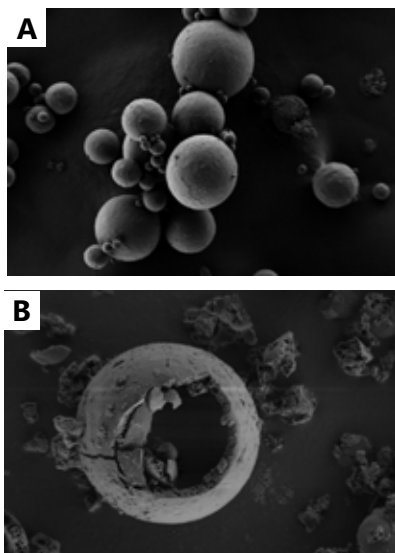
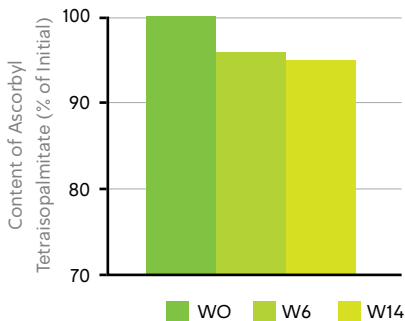


Fig. 1.A. SEM micrograph of Ascorbyl Tetraisopalmitate microcapsules, CelluCap™- C. B. SEM observation demonstrating the Release on Demand™ (RND™) technology by applying mechanical pressure.

## FORMULATORY ADVANTAGES

Tagra's unique delivery system ensures optimal isolation of the Ascorbyl Tetraisopalmitate resulting in increase of its stability (Fig. 2), preventing incompatibilities and formulation discoloration. CelluCap™- C appears as a non-agglomerate powder which is easily incorporated into the already made base formulation during the last stage of preparation.

The product is compatible with all types of cosmetic formulations, no stabilizers or special equipment required, without any pH limitations. CelluCap™ range complies with all regulatory requirements worldwide.



**Figure. 2** Stability of CelluCap™- C incorporated in a topical O/W formulation, after 6 and 14 weeks at 40°C.

## CELLUCAP™-C: CLINICAL EVALUATION

The anti-aging effect of 2% w/w CelluCap™- C as evaluated on 5 female volunteers treated with O/W formulation.

### SIGNIFICANT WRINKLE REDUCTION - AFTER 14 AND 28 DAYS

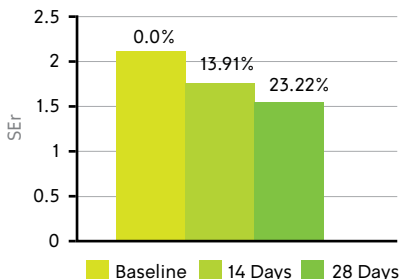


BASELINE- 32,349 PX

DAY 14- 12,318 PX  
61.92% WRINKLE REDUCTION

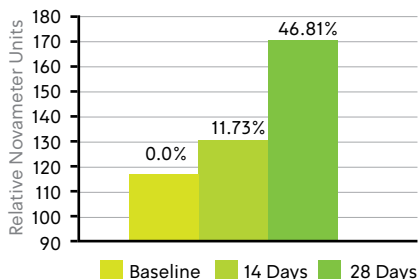
DAY 28- 11,108 PX  
65.66% WRINKLE REDUCTION

## SIGNIFICANT ROUGHNESS REDUCTION (SEr) VIA VISIOSCAN



Surface evaluation of living skin via Visioscan demonstrates a decrease in SEr parameter associated with reduction in depth fine lines and wrinkles.

## CELLUCAP™- C SIGNIFICANTLY IMPROVED SKIN MOISTURIZATION



A relative measure of the retained water content of the skin as function of skins dielectric value.

## INCREASE OF SKIN BRIGHTENING

Twelve Asian females (aged 35–60 years old) treated with formulation containing 3% w/w CelluCap™- C demonstrated increase in skin brightening as indicated by measuring melanin levels and ITA° angle. Cream was applied twice daily on face and on both outer forearms. Non-treated areas served as a baseline (t0w).

## DECREASE OF MELANIN CONTENT



\* P<0.05 as compared to baseline

## INCREASE OF SKIN WHITENING INDEX



## Technical information

- **INCI Name** Cellulose Acetate butyrate, Ascorbyl Tetraisopalmitate, Pentaerythrityl Tetra-di-t-butyl Hydroxyhydrocinnamate
- **Appearance** White powder
- **Application** Face/ Skin Care, Color cosmetics
- **Dosage** 0.5%–3%
- **Processing** add at the last stage of formulation preparation, using a paddle mixture, below 40°C degrees

## Super Hydrating & Renewal Water Drop Moisturizer

Super-hydrating cream giving a cool, watery feeling whilst enhancing brightening, nourishment and regeneration of the skin. Formulation contains CelluCap™- C which has been clinically proven to reduce wrinkles and improves skin's brightening.

	INGREDIENT	INCI NAME	% w/w	SUPPLIER
Phase A	5225C FORMULATION AID	Cyclopentasiloxane (and) PEG/PPG-18/18 Dimethicone	5	Dow Corning
	DOW CORNING® 245 FLUID	Cyclopentasiloxane	5	Dow Corning
	DOW CORNING® 200 FLUID, 5 CST	Dimethicone	5	Dow Corning
	Verstatil PC	Phenoxyethanol &Caprylyl Glycol	1	Dr. Straetmans
	Perfume COCO M	Perfume (Fragrance)	0.2	Turpaz
Phase B	Water	Aqua	ad 100	
	GENENCARE® OSMS BA	Betaine	2	DuPont
	Glycerin		2	
	Zemea® Propanediol	Propanediol	3	DuPont Tate & Lyle
	Epilobium Angustifolium Flower/Leaf/Stem Extract	Epilobium Angustifolium Flower/Leaf/Stem Extract	3	
	Sodium chloride	Sodium chloride	1	
Phase C	CelluCap™- C	Ascorbyl tetraispalmitate (and) Cellulose Acetate butyrate (and) Pentaerythrityl Tetra-di-t-butyl Hydroxyhydrocinnamate	2	TAGRA

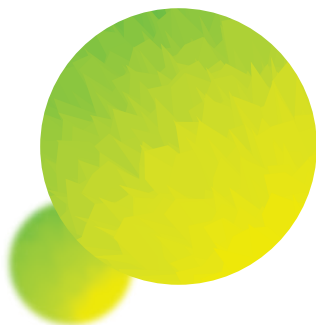
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## Procedure

1. Take phase A mix it all together at RT
2. Phase B dissolve the GENENCARE® OSMS BA into the water by mixing then add sodium chloride and when both dissolved, add the remaining ingredients of phase B.
3. Add phase B to phase A under constant stirring slowly, so that the water phase doesn't remain at the top of the cream. Increase the speed as the emulsion forms and viscosity increases.
4. When homogenous cream is formed, gradually add phase C to the cream using a paddle/anchor mixer

## Properties

- ° **pH** 7
- ° **Stability** 30 days at 50 °C
- ° **Appearance** White Cream





For more information and samples please contact: [info@tagra.com](mailto:info@tagra.com)