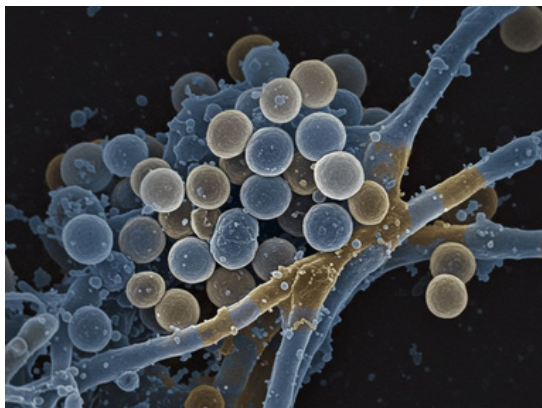


BROCCOLI EXOSOMES**Code: EXO-2**

Definition: Exosomes are small, nanometer-sized extracellular vesicles secreted by cells. They act as messengers, transporting proteins, nucleic acids, and other molecules to other cells. They play a crucial role in intercellular communication and various biological processes. They are generated from late endosomes, which are intracellular compartments, through a process called multivesicular body (MVB) formation. Intraluminal vesicles form in the lumen of the endosome and subsequently fuse with the cell membrane to be released as exosomes.

Exosomes are not simple empty sacs; they contain various molecules, such as proteins, lipids, nucleic acids (mRNA, miRNA, etc.), and metabolites.

Cosmetic properties: Broccoli exosomes have notable cosmetic properties, primarily related to cell regeneration and skin rejuvenation.

These tiny cellular vehicles, found in broccoli, contain growth factors and other bioactive molecules that promote cell renewal, collagen and elastin production, and reduce inflammation, resulting in firmer, more elastic, and less wrinkled skin.

They stimulate the division and differentiation of skin cells, accelerating the repair of damaged tissue and recovery after treatments such as laser or peels.

Thanks to their ability to increase collagen and elastin production, they help reduce wrinkles and fine lines, improving skin firmness and elasticity.

They possess antioxidant and anti-inflammatory properties that can soothe irritated skin and reduce redness, making them beneficial for sensitive skin or skin conditions such as rosacea.

They promote more even and smooth skin, diminishing blemishes and irregularities.

They help keep skin hydrated and supple, improving its ability to retain moisture.

**References:**

1 Exosome-like nanoparticles derived from fruits, vegetables, and herbs: innovative strategies of therapeutic and drug delivery
Bo Zhao, Hangjuan Lin , Xinchu Jiang, Wanshu Li , Yuli Gao¹, Minghui Li , Yanan Yu, Ninggang Chen, Jianqing Gao.

2 Broccoli-Derived Exosome-like Nanoparticles Alleviate Loperamide-Induced Constipation, in Correlation with Regulation on Gut Microbiota and Tryptophan Metabolism. Tianchi Duan: Xiaoyuan Wang; Xinyue Don; Chennan Wang; Lu Wang; Xingbin Yan; Ting Li

BROCCOLI EXOSOMES

CODE: EXO-2

Date of last amendment: 22.03.2025

INCI name: BRASSICA OLERACEA ITALICA EXTRACT (AND) BRASSICA OLERACEA ITALICA VESICLES (AND) PROPANEDIOL (AND) SODIUM LEVULINATE (AND) XANTHAN GUM (AND) POTASSIUM SORBATE.

Description: Broccoli extract enriched with exosomes isolated by ultra-filtration of said concentrated extract and stabilized in a natural xanthan gum fluid gel.

Properties: Powerful antioxidant and anti-oxidative stress action. Activates cell regeneration. Ideal for anti-aging formulations and for skin exposed to sunlight. Has decongestant and moisturizing properties.

COMPOSITION (INCI NAME)	% (Weight)	# CAS
Brassica Oleracea Italica Extract (and) Brassica Oleracea Italica Vesicles	94,150	-----
Xanthan Gum	0,300	11138-66-2
Preservatives:		
Propanediol Caprylyl Glycol	5,000	504-63-2
Sodium Levulinate	0,400	19856-23-6
Potassium Sorbate	0,150	24634-61-5
Concentration of Exosome Particles	Greater than 10 billion particles/ml. Measurement method: NTA (Nanoparticle Tracking Analysis). Equipment: Nanosight NS300 (MALVERN PANALYTICAL, U.K.)	
Particle size	30 nm -500 nm (NTA Method: Nanoparticle Tracking Analysis)	
Extraction method:	Ultra-Filtration.	
Net surface charge of the particle:	Negative.	
Aspect:	Semi-translucent to opalescent fluid gel.	
Color:	Colorless to slightly yellowish or greenish.	
Odor:	Characteristic.	
pH:	4,00 – 6,00 (25°C) (USP XLIV and sub. updates).	
Density:	0,980 – 1,050 (pycnometer) (20°C) (USP XLIV and sub. updates).	
Dry residue:	3 gr % minimum (0,5 gr. 1 hour 110° C).	
Microbiological control:	Mesophilic bacteria: less than 100 CFU/gr. Moulds & yeast: less than 20 CFU/gr. No pathogens.	
Observation:	The product may form flocs or precipitates after long periods of storage. These are easily dispersed with gentle agitation.	

Keep refrigerated (5-15°C). Do not freeze. Protect from light. Shake before use.

EXTERNAL COSMETIC USE