

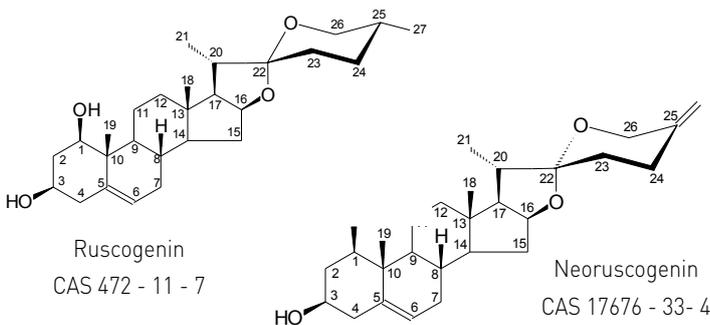
RUSCOGENINS C

CELLULITE MANAGEMENT VASOPROTECTANT

CHARACTERISTICS

RUSCOGENINS C	AVAILABLE DOCUMENTATION
HPLC content of ruscogenins: 92.0-103.0% HPLC content of neoruscogenin: 60.0-80.0% HPLC content of ruscogenin: 20.0-40.0% Form: fine white powder Stability: retesting date after 5 years Level of use: 0.1-1.0% Water content (Ph. Eur. meth. A): ≤ 3.0% Solubility*: soluble in Alcohol (95°), Propylene glycol**, Ethoxydiglycol**, Caprylic/Capric Triglycerides**, Polyethylenglycol**, Polysorbate 80**, Olive Oil**, Glyceryl Oleate**	Botanical Certificate Method of analysis Reference Standards Declaration GMO free Safety Data Sheet Published Literature Confidential documentation

* solubility has been tested at 50 mg in 10 g of solvent (RT); ** solubility has been tested at 50 mg in 10 g of solvent at 40-50°C



SAFETY DATA*

- The use of Ruscogenins in the tests performed
- showed they are devoid of side effects like as localized erythema or skin discomfort of any type, and showed
- tolerability in all trials performed so far on their
- topical application.

FORMULATION EXAMPLES

EMULSION FOR TIRED LEGS WITH RUSCOGENINS C		Formulation Advice
Aqua (water)	64.55%	As a general rule, plant derivatives should be added to the phase most suitable for their dissolution or dispersion. A special attention should be paid to the action of saponins and related compounds (like ruscogenin and neoruscogenin) on the HLB of emulsions. This is most prominent in W/O emulsions, whereas practically negligible in O/W ones.
Ruscogenins C	0.25%	
Hamamelis virginiana	10.00%	
Disodium EDTA	0.10%	
PEG-90 stearate / Glyceryl stearate	10.00%	
C12-15 Alkylbenzoate	5.00%	
Squalane	5.00%	
Cethyl palmitate	2.50%	
Dimethicone	0.50%	
Preservative	0.80%	
Perfume (fragrance)	0.30%	ALSO SUITABLE FOR: Body care emulsions Anti-cellulite products Legs care and heavy legs Hair care and hair loss prevention Firming products Anti ageing and skin care applications After sun products Treatments for sensitive skin and redness
Polyacrylamide, C13-14 Isoparaffin laureth-7	1.00%	

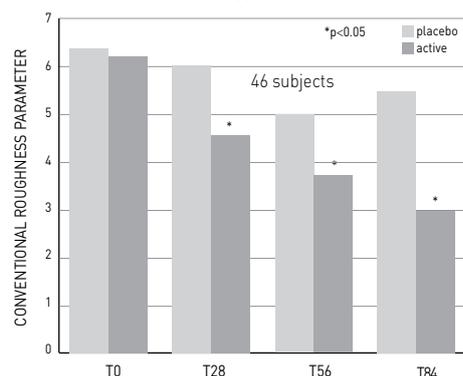
* All safety trials are compliant to EU regulation 1223/2009.

The ingredients described herein are offered for consideration for use in personal care products. The information provided describes historical use, ingredient activity and other information that may be relevant to their use in such products. How each ingredient would contribute to a particular product would be formulation specific. Furthermore please note that this documentation is available for various countries all over the world and hence it may contain statements not applicable to your country.

CELLULITE MANAGEMENT

- Forty-six female volunteers¹ with a moderate level of cellulite on the thighs and a weight/height ratio of 20-25 (normal weight) have been treated with a product containing Ruscogenins C, retinol, caffeine and alcohol. The active and the placebo product (containing ethanol to provide the same feeling but devoid of the other actives) have been applied on each thigh regularly and uniformly by circular massage. The application was repeated twice a day for three months, and the measurements were taken before the application and after 28, 56 and 84 days of application.
- The orange peel effect (macrorelief on the skin) obtained by digital imaging and calculated with conventional roughness RZ parameter, decreased by 53.1% ($p < 0.05$) after three months' treatment, whereas a 14% reduction was observed with the placebo. According to the objective measurements of the other parameters, an improvement in the dermis and ipodermis structure, a firming effect (mechanical characteristics of the skin) and an increase in microcirculation were also observed.

Effect of topical anticellulite treatment on orange peel appearance

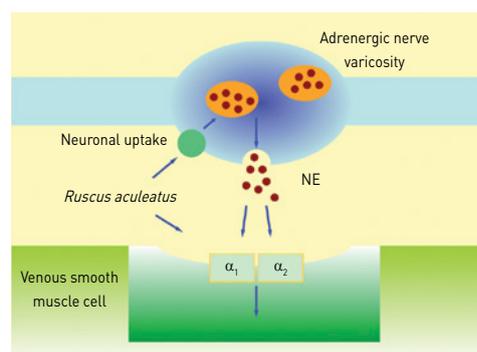


IN VITRO ANTI-ELASTASE AND ANTI-HYALURONIDASE ACTIVITIES

- The steroid saponins obtained from *Ruscus aculeatus* L. rhizomes and roots have been investigated to evaluate their anti-elastase and anti-hyaluronidase activity.² Elastase and hyaluronidase are lysosomal enzymes promoting the degradation of the main components of the extracellular matrix as elastin, collagen, proteoglycans and hyaluronic acid. Recovering the integrity of such constituents can decrease the permeability of the capillary system thus improving microcirculation at capillary level, and improves the skin elasticity and hydration reducing the signs of ageing. The anti-elastase activity was evaluated according to a modified Bieth method.³ Activity was evident already at 75 µg (inhibition of 10.3%) peaked at 150 µg (inhibition of 74.7%) with an $IC_{50} = 119.9$ µM.

MECHANISM OF ACTION

- The biological activity of *Ruscus aculeatus* L. is attributed to steroid saponins, and their aglycones, mainly ruscogenin and neoruscogenin, which have vasoconstricting and anti-inflammatory effect. The active compounds have been found to enhance venous circulation by promoting muscle contractions with a mechanism involving post junctional α -adrenergic receptors.⁴ Moreover, they inhibit the enzyme elastase ($IC_{50} = 119.9$ µM), maintaining the integrity of the constituents of the connective tissue overall exerting anti-ageing effect.



DID YOU KNOW...

- Butchers' broom, the common name of *Ruscus aculeatus* L., derives its name from the fact that its branches were bound in bundles and used by butchers to sweep their cutting blocks. It was also commonly used as a broom or a besom. The young shoots of the plant used to be eaten much like asparagus, to which it is botanically closely linked.

TRADE NAME	INCI (PCPC)	INCI (EU)	EINECS N.	CAS N.	INDENA CODE
Ruscogenins C	Neoruscogenin	Neoruscogenin	241 - 660 - 1	17676 - 33 - 4	3056010
	Ruscogenin	Ruscogenin	207 - 447 - 2	472 - 11 - 7	

1. Bertin C. et al., "A double blind evaluation of the activity of an anti-cellulite product containing retinol, caffeine and ruscogenine by a combination of several non invasive methods", *J. Cosmet. Sci.* 52, 199-210, 2001 - 2. Maffei Facino R. et al., "Anti-elastase and anti-hyaluronidase activities of saponins and sapogenins from *Hedera helix*, *Aesculus hippocastanum* and *Ruscus aculeatus*: factors contributing to their efficacy in the treatment of venous insufficiency", *Arch. Pharm.* 328, 720-724, 1995 - 3. Bieth J. et al, *Biochem. Med.* 11, 350-357, 1974. - 4. Cristoni A., "Ingredienti funzionali per microcircolo e tessuto connettivo", *Cosm. Technol.* 6 (4), 09-14, 2003.

