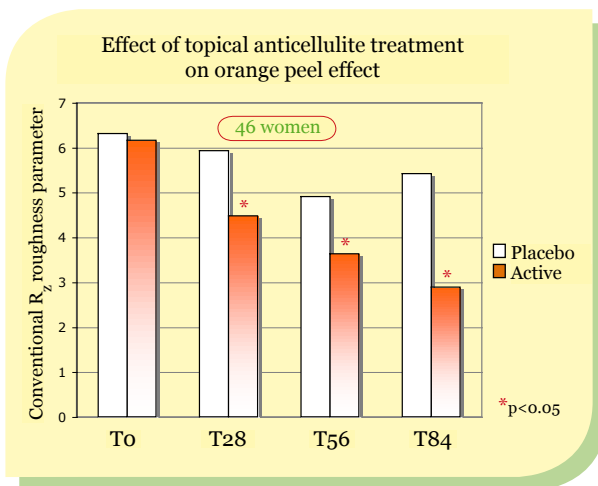




# Ruscogenins C

**Skin circulation and orange peel condition improver**

## Proven efficacy on humans



Forty-six female volunteers<sup>1</sup> 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 R<sub>z</sub> parameter, decreased by 53.1% (statistically significant) 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 observed.

## In vitro activity

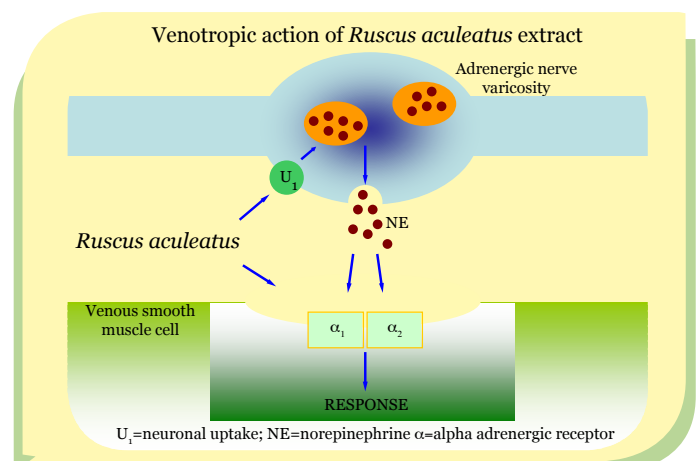
The steroid saponins obtained from *Ruscus aculeatus* L. rhizomes and roots have been investigated to evaluate their anti-elastase and anti-hyaluronidase activity.<sup>2</sup> Elastase and hyaluronidase are lisosomal enzymes promoting the degradation of the main components of the extracellular matrix 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.<sup>3</sup> Activity was evident already at 75 µg (inhibition of 10.3%) peaked at 150 µg (inhibition of 74.7%) with an IC<sub>50</sub>=119.9 µM.

## Mechanism of action

The pharmacological activity of *Ruscus aculeatus* L. is attributed to steroid saponins, and their aglycones, mainly ruscogenin and neoruscogenin, which have venoconstricting 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.<sup>4</sup> Moreover, they inhibit the enzyme elastase (IC<sub>50</sub> = 119.9 µM), maintaining the integrity of the constituents of the connective tissue overall exerting anti-ageing effect.

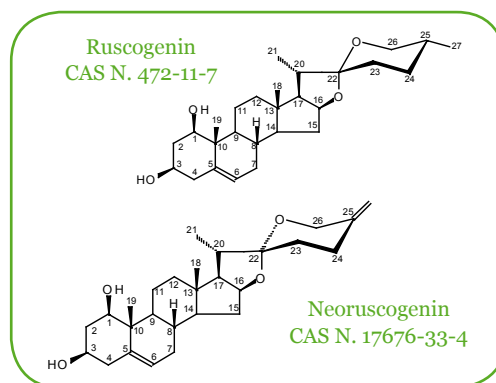
1. Bertin C. *et al.*, *J. Cosmet. Sci.* 52, 199-210 (2001) - 2. Maffei Facino R. *et al.*, "Anti-elastase and anti-hyaluronidase activities of saponins and sapogenins from *Hedera helix*, *Aesculus hippocastanum* and *Ruscus aculeatus*: factors contributing to their efficacy in the treatment of venous 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).



## Safety Data

Ruscogenins 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.

## Characteristics



Ruscogenins C	Available Documentation	
<p>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: 0.5-1.0%                      Odour: odourless                      pH: not applicable (insoluble in water)</p>	<p>Water content (Ph. Eur. meth. A): ≤ 3.0%                      Solubility*: soluble in Alcohol (95°), Propylene glycol**, Ethoxydiglycol**, Caprylic/Capric Triglycerides**, Polyethylenglycol**, Polysorbate 80**, Olive Oil**, Glycerol Oleate**                      Aqua (water): dispersible</p>	<p>Botanical Certificate                      Methods of Analysis                      Reference Standard                      Declaration GMO free                      Safety Data Sheet                      Confidential Documentation</p>

\*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

## Formulation examples

O/W emulsion	Formulative tips																						
<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 60%;">RUSCOGENINS C</td><td style="text-align: right;">0.10%</td></tr> <tr><td>18-β Glycyrrhetic Acid</td><td style="text-align: right;">0.30%</td></tr> <tr><td>C<sub>12-20</sub> Acid PEG-8 Ester</td><td style="text-align: right;">12.00%</td></tr> <tr><td>Glyceryl Stearate</td><td style="text-align: right;">2.00%</td></tr> <tr><td>Wheat Germ Oil</td><td style="text-align: right;">6.00%</td></tr> <tr><td>Dimethicone</td><td style="text-align: right;">0.50%</td></tr> <tr><td>Antioxidants</td><td style="text-align: right;">0.05%</td></tr> <tr><td>Purified water</td><td style="text-align: right;">q.s.</td></tr> <tr><td>Preservatives</td><td style="text-align: right;">q.s.</td></tr> <tr><td>Glycerin</td><td style="text-align: right;">5.00%</td></tr> <tr><td>Fragrance</td><td style="text-align: right;">q.s.</td></tr> </table>	RUSCOGENINS C	0.10%	18-β Glycyrrhetic Acid	0.30%	C <sub>12-20</sub> Acid PEG-8 Ester	12.00%	Glyceryl Stearate	2.00%	Wheat Germ Oil	6.00%	Dimethicone	0.50%	Antioxidants	0.05%	Purified water	q.s.	Preservatives	q.s.	Glycerin	5.00%	Fragrance	q.s.	<p>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.</p> <p style="text-align: center;"><b>Also suitable for:</b></p> <p>Products for the external treatment of cellulitis and heavy legs, for the prevention or coadjuvant treatment of sensitive skin, couperose, after sun products, after shave and after depilation products.</p>
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## 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 (CTFA)	INCI (E.U.)	EINECS N.	CAS N.	INDENA CODE
Ruscogenins C	Neoruscogenin (and)	Neoruscogenin	241-660-1	17676-33-4	3056010
	Ruscogenin	Ruscogenin	207-447-2	472-11-7	