



# Horse Chestnut Saponins

**A non irritant foaming and washing natural substance**

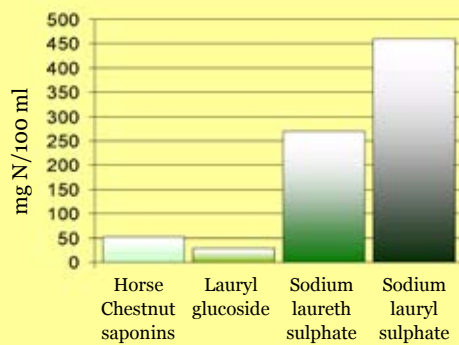
## Safety and efficacy evaluations on human volunteers

### Safety and efficacy after repeated applications

Colorimetry pHmetry Corneometry	No variations
Sebometry	Slight decrease (<8%)

The test<sup>1</sup> consists in applying a solution of Horse Chestnut Saponins at 2% on the forearm of 12 volunteers and evaluating skin parameters, at time zero, after 7 days and 15 days, in comparison with a non treated zone. Results showed no variation of pH, moisture and color and an 8% decrease of the skin sebum, showing excellent tolerability of Horse Chestnut Saponins on skin.

### Zein number test



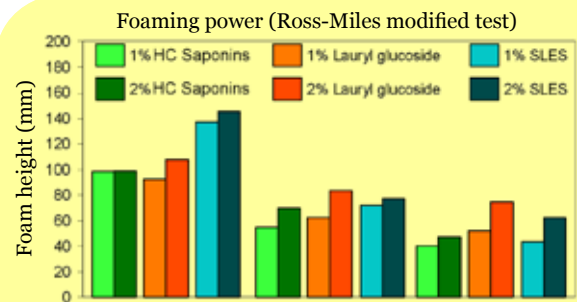
### Comparative skin potential irritation

The free Nitrogen content (mg N/100 ml) of an aqueous solution of Zein (water-insoluble corn protein, which resembles the protein present in human skin and hair) and test surfactant was determined. Value obtained is called Zein Number and it has been found to indicate "skin irritation potential" in vitro. The value obtained for Horse Chestnut Saponins (58mg N/100ml) enables to classify the product as non irritant.<sup>2</sup>

The test has been carried out in comparison with Sodium Lauryl Sulphate (SLS, 455 mg N/100 ml - irritant), Sodium Laureth Sulphate (SLES, 270mg N/ml - Mild irritant) and Lauryl Glucoside (27 mg N/100ml - not irritant).

### Foaming activity and washing power

The capacity to produce foam has been tested using the Ross Miles modified test and has been compared with common used chemical surfactants. The results show that the height of the foam obtained with Horse Chestnut Saponins is comparable to Lauryl Glucoside at the same concentrations (1% and 2%). A sensory evaluation of foam has been performed as well: Horse Chestnut Saponins produce small and medium sized dense, homogeneous bubbles, persisting for up to ten minutes (data with 1% solutions not reported in table but available<sup>3</sup>).



### Sensory evaluation of foam<sup>1</sup>

Substance	0 min	5 min	10 min
Horse Chestnut Saponins 2%	Dense, homogeneous bubbles S/M	Dense, homogeneous bubbles S/M	Close to solution level bubbles S/M
Lauryl Glucoside 2%	Dense, homogeneous bubbles S	Dense, homogeneous bubbles S	Dense, homogeneous bubbles S/M
Sodium Laureth Sulphate 2%	Dense, homogeneous bubbles S/M	Dense, very relaxed bubbles	Dense, very relaxed bubbles

The washing power of Horse Chestnut Saponins has been tested with the Launder-O-Meter test showing a good detergent activity of the product.

1. ISPE (Institute of Skin and Product Evaluation) confidential report; Milan, 21 November 2000 - 2. Indena internal report 267/99/LSF - 3. Internal report: n.°163100-2210312000 - 4. HPLC chart available - 5. Biolab internal report no. 00/18344 I (14/12/2000) - 6. ISPE (Institute of Skin and Product Evaluation) - Internal report - Milan, 28 February 2000 - 7. ISPE (Institute of Skin and Product Evaluation) - Internal report - Milan, 27 June 2000.



## Mechanism of action

It is well known that saponins are surfactants that, when dissolved in water, develop foam. Horse Chestnut Saponins HPLC-ESI-MS characterization showed the presence of saponins qualitatively different from escin, being composed of a complex mixture of more than thirty saponins.<sup>4</sup>

## Safety data

Mutagenicity (Ames test): not mutagenic.<sup>5</sup>

Toxicological evaluation (on man): skin irritation patch test at 1% and 2%, not irritant.<sup>1</sup>

Safety and efficacy evaluation after use (at 1% and 2%) on volunteers.<sup>6,7</sup>

## Characteristics

Horse Chestnut Saponins	Available Documentation
Spectrophotometric content of saponins: 8.0-16.0 Form: Light brown fine powder Stability: 24 months long term stability in commercial packaging (25°C, 60% RH) and 6 months accelerated stability 40°C, 75% RH). Levels of use: 1-2% Odor: Odorless	Botanical Certificate Methods of Analysis Declaration GMO free Safety Data Sheet Published literature Confidential Documentation
pH (c=5, water): 4.0-6.0 Solubility*: Aqua (water), Alcohol 50°, Propylene Glycol, Propylene Glycol: Water (1:1 w/w), Glycerin, Glycerin: Water (1:1 w/w), Butylene Glycol: Water (1:1 w/w), Ethoxydiglycol: Water (1:1 w/w). Solubility**: Aqua (water)	

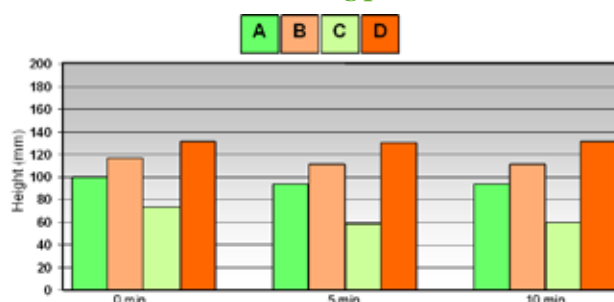
\*50 mg Horse Chestnut Saponins in 10 g of solvent

\*\*800 mg Horse Chestnut Saponins in 10 g of solvent

## Formulation examples

### Foaming power (Ross - Miles modified test) for intimate cleaning product

	Formulation A	Formulation B	Formulation C	Formulation D
Horse Chestnut Saponins	-----	2.00 g	2.00 g	2.00 g
Disodium Laureth Sulfosuccinate sol. 27%	10.00 g	10.00 g	10.00 g	10.00 g
Disodium Cocamidopropylacetate sol. 27%	6.00 g	6.00 g	-----	-----
Sodium Cocoyl Glutamate and Disodium Cocoyl Glutamate sol. 50%	4.00 g	-----	-----	4.00 g
Thickener	q.b.	q.b.	q.b.	q.b.
Preservatives	q.b.	q.b.	q.b.	q.b.
Water	q.b. s. 100 mL	q.b. s. 100 mL	q.b. s. 100 mL	q.b. s. 100 mL



### HC Saponins are recommended in formulations for frequent washings

Horse Chestnut Saponins are recommended as a delicate cosmetic foaming agent, containing substances of botanical origin, and could be considered a secondary foaming ingredient, with a boosting effect, good foaming power and additional washing power. Adding Horse Chestnut Saponins to detergent formulations, it is possible to reduce the amount of chemical surfactants normally used in detergency, thus reducing their skin irritant properties and aggressiveness, maintaining their foaming and washing properties.

### Also suitable for

Mild or daily-use shampoos  
 Baby shampoos and hair conditioners  
 Bath/shower detergents  
 Liquid soaps for hands or body  
 Toothpastes and mouthwashes  
 Hair lotions

## Did you know...

Horse Chestnut Saponins have been obtained by successive fractionations by *Aesculus hippocastanum* L., isolating saponins purified by the presence of escin.

TRADE NAME	INCI (CTFA)	INCI (E.U.)	EINECS N.	CAS N.	INDENA CODE
Horse Chestnut Saponins	<i>Aesculus hippocastanum</i> (Horse Chestnut) Seed Extract	<i>Aesculus hippocastanum</i> Seed Extract	232 - 497 - 7	8053 - 39 - 2	9038000