

Saviotan[®] Feed

MORE NATURE TO LIFE



Bovine

+ HEALTH

+ PERFORMANCE



PRODUCED BY

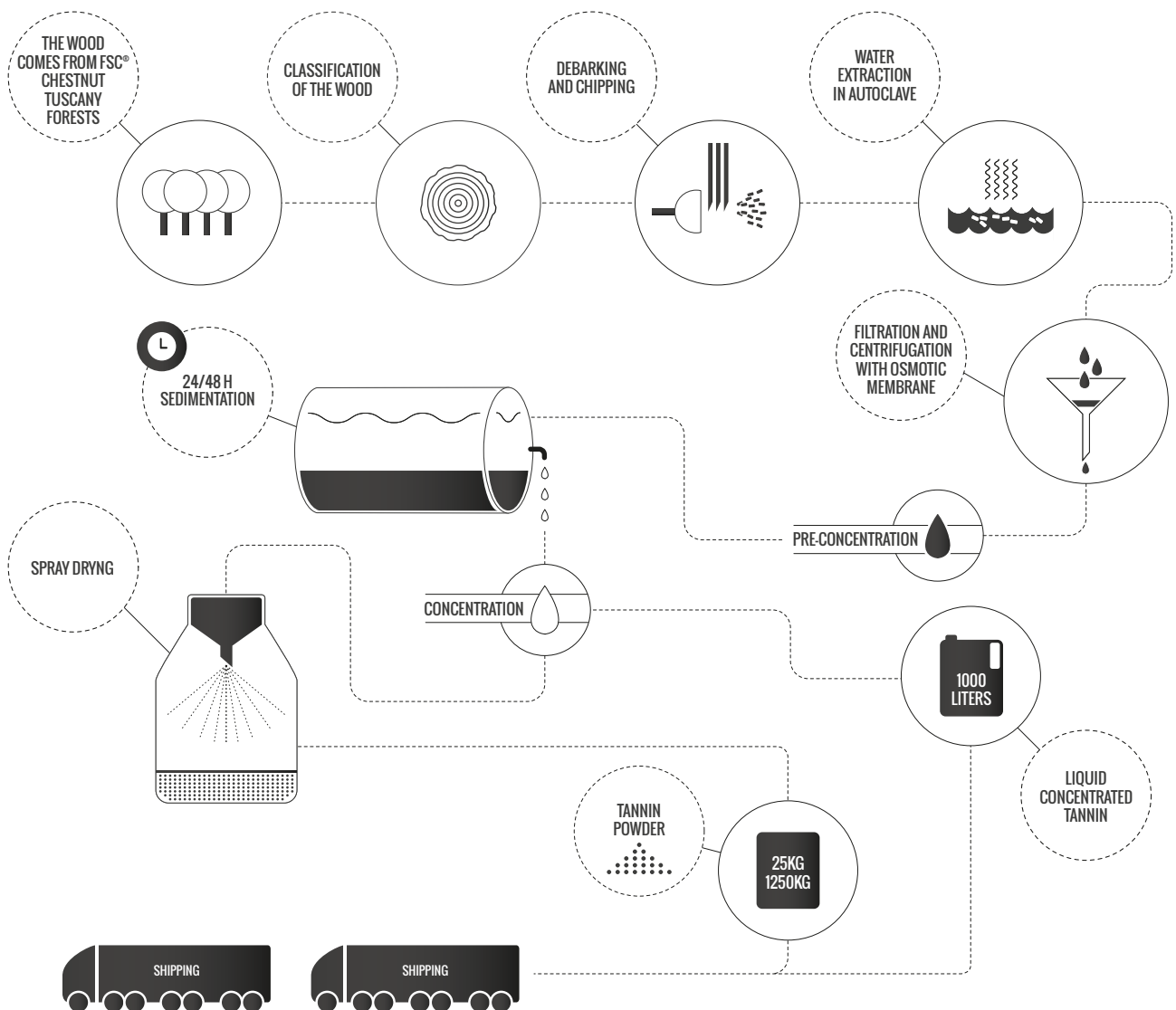




Saviotan® Feed is an additive for animal nutrition.
 Saviotan® Feed is a natural chestnut extract, rich in hydrolysable tannin.
 Production takes place in Radicofani, Tuscany, Italy.
 Woods come from FSC certified forests located in Tuscany.

Chestnut tannin is obtained by water extraction from chestnut wood, by an environmentally sustainable unique process.

Production flow chart



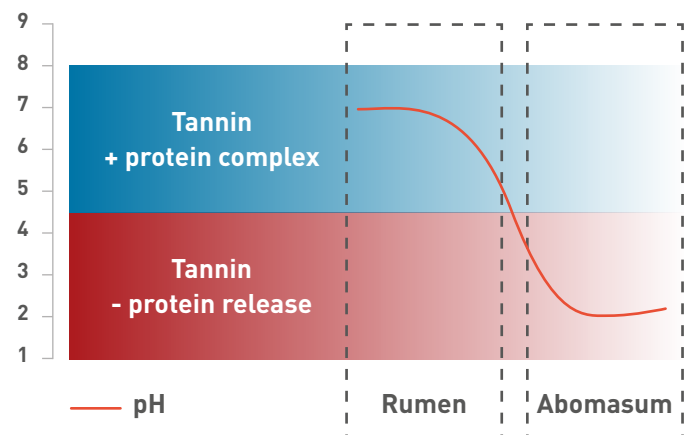
Radicofani manufacturing plant, Gruppo Mauro Saviola srl, is FAMI-QS, GMP+ and UNI EN ISO 22000 certified.



Saviotan® Feed for a protein by pass activity

Saviotan® Feed enhances correct digestion and absorption of amino acids in the intestinal tract because it has the capability to reduce the protein degradation in the rumen. Saviotan® Feed has the biological properties to form a tannin-protein complex (hydrogen bonds) at certain pH conditions [3.5 – 8.0]. These complexes, stable at rumen pH, dissociate when the pH falls below 3.5 (such as in the abomasum where pH is 2.5-3.0). In the rumen, tannins act as a protein carrier, reducing the protein attack by the ruminal microflora. Due to a lower pH in the abomasum compared to the rumen, a progressive release of proteins occurs from the tannin complex (by-pass effect).

Tannin protein complex capacity in relation to the gastrointestinal pH

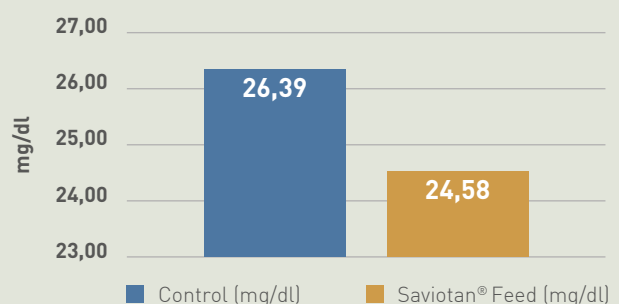


Saviotan® Feed for urea milk reduction

Milk Urea Content is lower when using Saviotan® Feed; field trial performed on 30 dairy cows demonstrates that dietary supplementation of Saviotan® Feed reduces the milk urea content (-7%) confirming the more efficient use of protein nitrogen.

[Carpaneta trial, unpublished]

Milk Urea Content mg/dl



Saviotan® Feed for reduction of the methane emission

Methane produced during anaerobic fermentation in the rumen, represents a feed energy loss and contributes to an increase in the greenhouse effect.

Chestnut extract, rich in Hydrolysable Tannins, decreases ruminal methane emission (*in vitro* trial)

mainly due to inhibition of the growth of methanogens (protozoa responsible of methanogenesis in the rumen).

Field experience confirms that animals, fed with Chestnut extract, have a lower methane emission.

Effect of addition of chestnut tannin on gas and methane production

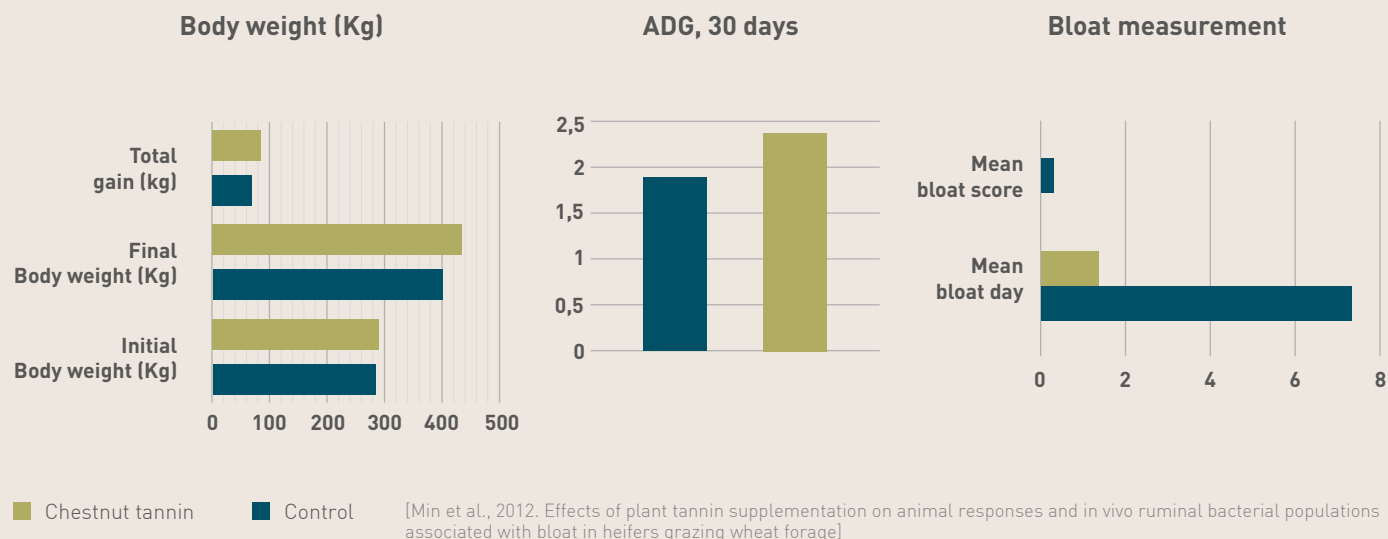
	Dose (mg/ml)	Gas (ml)	CH (ml/l)
Control	0	83,8	198
Chestnut extract	0,5	82,2	195
	0,75	80,7	192
	1	78,7	185

[Jayanegara et al., 2015. Divergence between purified hydrolyzable and condensed tannin effects on methane emission rumen fermentation and microbial population *in vitro*. Animal Feed Science and Technology 209, 60-68]

Saviotan® Feed for reducing bloat severity

In vivo studies attested that supplementation of Chestnut Tannin reduces the rate and frequency of frothy bloat, and bloat frequency due to the precipitation of soluble proteins (tannin complex decreases Ruminal Degradable proteins and increases Undegradable Proteins) and through antimicrobial activity of tannins towards gram-positive bacteria.

The study was carried out on twenty-six heifers (286 +/-26 Kg) visually monitored daily for bloat score (0= no bloat; 3= severe bloat). Chestnut tannin supplementation increased Average Daily Gain and mean bloat score and bloat day were greater for the control diet than for Chestnut tannin supplemented treatment groups.



Saviotan® Feed for intestinal microbiota control

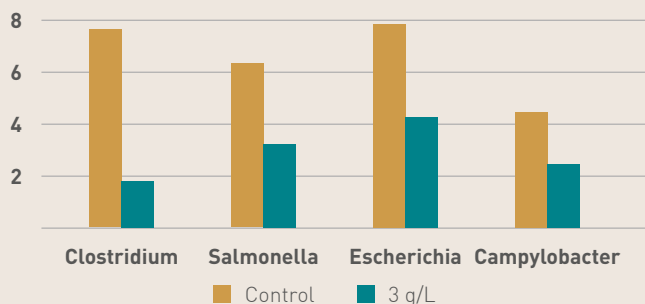
Saviotan® Feed interferes with the development of bacteria and parasite in gut because it complexes membrane protein altering the permeability of the cellular membrane.

Saviotan® Feed antimicrobial activity was tested *in vitro* on *Salmonella typhimurium*, *Escherichia coli*,

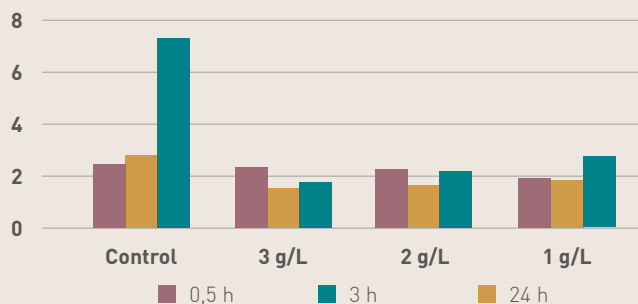
Campylobacter jejuni and *Clostridium perfringens*.

Not all the four bacterial colonies reacted to Saviotan® Feed in the same way: *Escherichia coli* resulted the least sensitive and *Clostridium perfringens* the most sensitive.

Saviotan® Feed on the *in vitro* growth of the four bacteria at 24 hours



Saviotan® Feed on the *in vitro* growth of *Clostridium perfringens* cultures



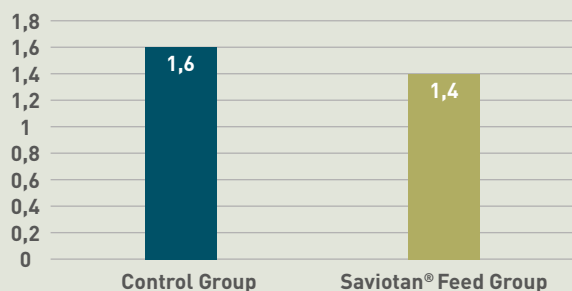
Saviotan® Feed for diarrhoea control

Chestnut tannin controls diarrhoea through its antispasmodic effect (it slows the peristaltic movements of the intestine). *In vitro* result has been confirmed by in vivo trial: oral administration of Saviotan® Feed reduces the duration of neonatal diarrhea. Trial has been performed on 24 Italian Friesian calves, both male and female, and the results are reported here following:

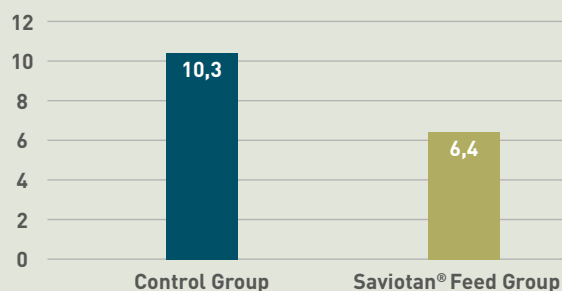
the duration of the diarrheic episode (DDE) was significantly reduced of 4 days and the Fecal Score was significantly better in the group treated with Saviotan® Feed (5g/liter).

[Budriesi et al., 2010]

Fecal Score recorded throughtout the DDE



Duration of Diarrheic Episode (DDE)



[Bonelli et al., 2018. Oral administration of chestnut tannins to reduce the duration of neonatal calf diarrhea. BMC Veterinary Research, 14:227]

Saviotan® Feed for its antioxidant properties

Saviotan® Feed is a polyphenol and exhibits greater antioxidant activities than simple phenolics: the number of hydroxyl groups and the degree of polymerization of tannin are considered to be correlated with their ability to scavenge free radicals. Antioxidant activity has been evaluated *in vitro* by using Folin-Ciocalteu reagent. The results are expressed as total phenol content, measured as GAE (Gallic Acid Equivalents) which is

considered to have an excellent correlation with the *in vitro* antioxidant activity.

FOLIN-CIOCALTEU (GAE equivalent, mg/g)

Saviotan® Feed	57.0
----------------	------

[Campo et al., 2015. Hydrolysable Tannins from Sweet Chestnut Fractions Obtained by a Sustainable and Eco-friendly Industrial process. Nat. prod. Commun. 11:409-415]

Saviotan® Feed technical data sheet

CHARACTERISTIC	METHOD OF ANALYSIS	MEASURE UNIT	SPECIFICATION
Description	Visual	/	Free flowing dark brown powder
Tannin content	ISO 14088	% w/w	Min 75
pH	Internal method n. LAB 004		3.2 ±0.2

Saviotan® Feed for use in animal feedingstuffs

Recommended instruction for use:
Dairy Cows: 20 – 30 g/head/day

Calves: 0.85 – 2.50 Kg/ton
Beef cattle: 20 – 40 g/head/day

Saviotan® Feed

MORE NATURE TO LIFE

Saviolife

Viale Lombardia, 29
46019, Viadana (MN) – Italy
Mail: info@saviolife.com
Phone: +39 0375 7871
Fax +39 0375 787200



www.saviolife.com
www.saviotanfeed.com



The Eco-Ethical Company