

Silvafeed ByPro / BPR is a natural blend of sensory flavoring additives, rich in tannins which is specifically developed for cattle nutrition.

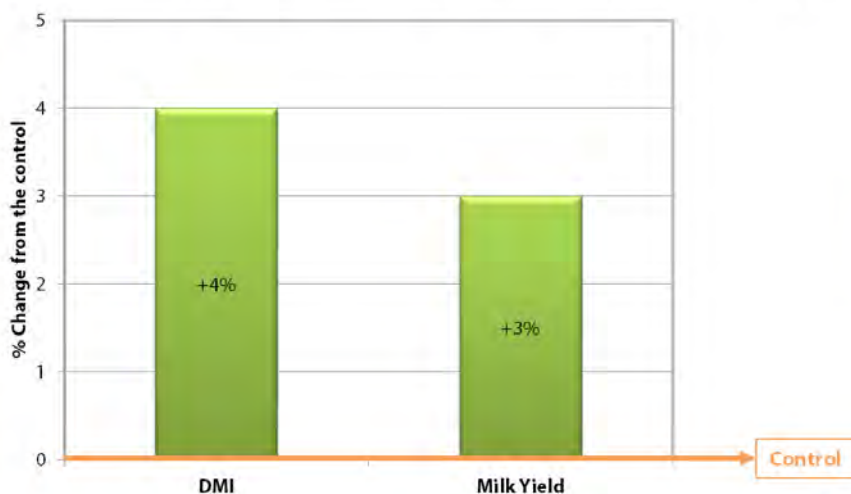
Tannins are poly phenolic compounds, also called as

protein protectants and are added in animal feed to save feed proteins from ruminal degradation. Tannins attach with the proteins, this (tannin + protein) bonding is strong and pH dependent

Silvafeed ByPro/BPR exerts beneficial effects on the health, growth & production of Ruminants by :

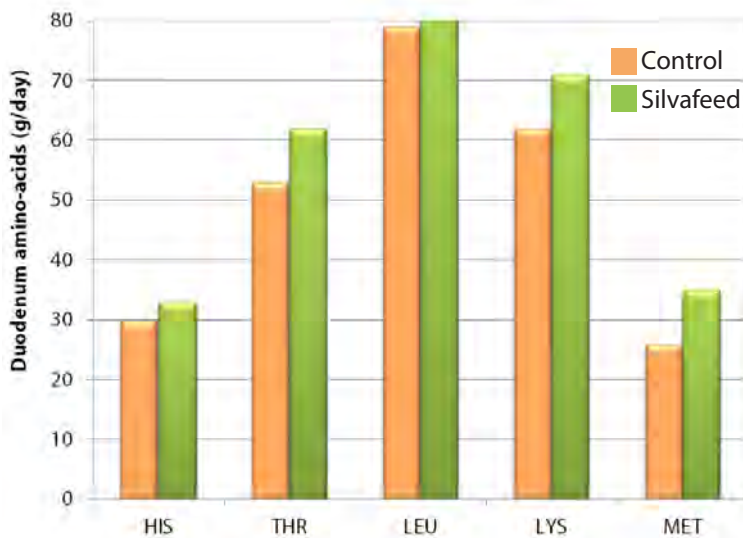
- Improving salivation
- Increasing feed intake
- Saving protein from ruminal degradation
- Balancing microflora ecosystem
- Enhancing intestinal Amino Acid availability
- Reducing bloat & diarrhea incidents

Figure 1: Silvafeed[®] ByPro / BPR effect on dry matter intake (DMI) and milk yield compared to a negative control.



Data from of several European, American and Asian studies.

The DMI increased to 4% and the Milk Yield improved to 3%

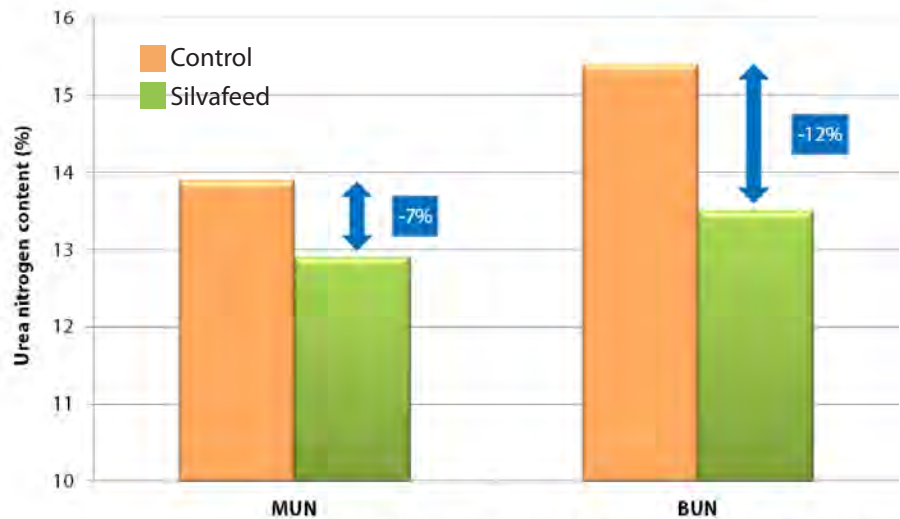


Amino Acid availability comparison using BPR and negative control group

Decruyenaere *et al.*, 2006 (Gembloux Agro-Bio Tech - Belgium) - DC409.

The increase in the amino-acids availability specifically of Histidine, Threonine, Leucine, Lysine & Methionine in the intestine demonstrates an improvement of animal production performances.

Milk Urea & Blood Urea Nitrogen comparison in BPR & control group



Aguerre *et al.*, 2009 (University of Wisconsin at Madison - USA) - DC405.

Use of BPR causes the reduction of **MUN (7%)** & **BUN (12%)** that aids to improve the reproductive efficiency, embryo viability & immune functions of the herd

Benefits

The beneficial effects of tannins are well-known and have been used for many years. The effects of Silvafeed[®] ByPro / BPR are linked to the chemical properties of specific tannins. The main benefits are listed below:

	Mode of Action	Related Effects	Benefits
When Consumed	FLAVOURING <ul style="list-style-type: none"> Improves taste and smell and helps to standardise the flavour of feed (Liu <i>et al.</i>, 2013); Increases the salivary flow to the rumen and improves pH control in the rumen and the growth of beneficial bacteria (Prinz <i>et al.</i>, 2000); Appealing astringent taste (McLeod, 1974). 	<ul style="list-style-type: none"> ✓ Increases the feed intake and insalivation of the feed. 	Increases animal performances
Ruminal Activity	PROTEIN BY-PASS <ul style="list-style-type: none"> A tannin-protein complex is formed in the rumen pH, but is unstable in the abomasum and small intestine pH. This interaction results in cleavage of the tannin-protein complex and allows protein to be digested in the small intestine (Zetler <i>et al.</i>, 1970; McMahon <i>et al.</i>, 2000); Reduces the amount of rumen degradable proteins and thus enhances the amount of proteins available in the small intestine (Wang <i>et al.</i>, 1996; Jones <i>et al.</i>, 1977; Waghorn <i>et al.</i>, 1997). 	<ul style="list-style-type: none"> ✓ Increases protein by-pass; ✓ Better nitrogen utilisation; ✓ Ammonia reduction; ✓ Improves energy efficiency. 	Reduces feeding cost Increases in milk yield and quality Reduces bloating episodes
	MICROFLORA INTERACTION <ul style="list-style-type: none"> Enhances the efficiency of nitrogen utilisation. Reduces rumen methane production and alters nitrogen partitioning (Jayanegara <i>et al.</i>, 2012; Wang <i>et al.</i>, 1996; Mao <i>et al.</i>, 2010; Aguerre <i>et al.</i>, 2009); Reduces nutritional stress such as bloat, by binding soluble proteins that form undesirable foam in the rumen and thus improving animal health and productivity (Decandia <i>et al.</i>, 2000; Patra <i>et al.</i>, 2009); Positively modulates the rumen fermentation towards a partial inhibition of certain bacteria such as protozoa and rumen enzymes (Jones <i>et al.</i>, 1994; Nelson <i>et al.</i>, 1995); Reduces the last step of the biohydrogenation process in the rumen improving the health properties of the milk (Vasta <i>et al.</i>, 2009). 	<ul style="list-style-type: none"> ✓ Less methanogenic activity; ✓ Improves flora ecosystem; ✓ Less soluble proteins available for bacteria fermentation. 	Lowers urea in blood and milk Less nitrogen in urine Less methane emissions Increases body weight gain and weight at weaning
Intestinal Activity	GUT MOTILITY MODULATION <ul style="list-style-type: none"> Modifies intestinal peristalsis due to the astringency of the product (Hangoor <i>et al.</i>, 2007); Increases protein absorption efficiency (Budriesi <i>et al.</i>, 2009). 	<ul style="list-style-type: none"> ✓ Increases the amino-acids absorption. 	Maximises intestinal health Decreases diarrhoea incidents Decreases treatments of antibiotics
	MICROFLORA INTERACTION <ul style="list-style-type: none"> Microflora selection through a competitive exclusion mechanism (Tosi <i>et al.</i>, 2007; De Lange, 2005); 	<ul style="list-style-type: none"> ✓ Balances intestinal microflora. 	

Dosage & Administration:

Silvafeed ByPro should be mixed well in feed before administration. The recommended daily dose for adult cow ranges from 10 - 15 gm per day. Daily dosage can be adjusted as per advice of a veterinarian.



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