Digestive modifiers

What is a digestive modifier?

It is a product or a combination of products that can be used to improve the digestive process of ruminants to utilise available food sources more optimally.

When is the best time to make use of a digestive modifier?

- During winter months when the pastures are dry, physiologically matured or killed by frost.
- When unpalatable, low digestible plants with high fibre content or high tannin levels have to be utilised.
- When animals are forced to browse.
- During drought conditions.
- When animals show signs of malnutrition or nutritional deficiencies.

Questions with which every farmer is struggling. How do I get the most possible value from the available pasture during the dry season?

The answer to this question is being influenced by:

- The amount (kg of available grass).
- The quality / nutritive value of the plants (kg of digestible nutrients).
- The palatability (kg of edible feed).
- The stock density (Type, nature and number of animals/Ha).

Are my animals satiated/is the amount of available feed enough?

The answer to this question is being influenced by:

- The seasonal influence and rainfall pattern.
- The available grass material (overgrazing, rainfall).
- The animal type and stock density. (grass or leaf eaters, stock management).
- The available leaf material (edible bushes and shrubs).

How do I get the most possible digestive value from the available pasture?

The answer to this question is being influenced by:

- Soil and plant physiology.
- Rainfall patterns
- Seasonal effects (Late start of rainfall season, first frost already occurred).
- Under and over utilisation of available pastures.
- Taste and nutritional value.

Keep in mind that the nutritive value of plants is being influenced by normal factors such as:

- Amount of rainfall during the season (nutritive value is lower due to faster growth rate).
- Maturation of plants (nutritive value decline dramatically with stage of maturation).
- Seasonal changes (nutritive value and palatability declines with winter frost).
- Drought conditions (palatability, nutritive value and digestibility declines).
- Available leaves and shrubs (Usually higher nutritive value but less palatable).

Will the animals eat the available plant material, and how do I increase the palatability of the available feed? (The higher the palatability, the better the ingestion of plant material will be.)

The answer to this question is being influenced by:

- The physical limitations of plants (thorns, waxy layers, lignin or woodiness).
- The chemical limitations of plants (tannins, terpenes, resins and oils).
- The plant physiology and age (stage of maturation, plants of previous seasons).

Use a 1 or 2 L plastic bottle (Coke)

- Make 8 holes with fence wire around the neck of the bottle

STEP 1 : Add required amount of BROWSE PLUS to bottle

STEP 2 : Add water to 3/4 of the bottle and shake to dissolve the powder

STEP 3 : Place the bottle under the ball valve and secure

STEP 4 : As water fills up then mixes with liquid through holes of the bottle - charge water in trough with a handful of BROWSE PLUS mixed into the water

Amount of animals = 5 animals x 3 g of BROWSE PLUS = 15 g into bottle

Administration and dosage

BROWSE PLUS: can be administered in feed (licks or pellets) or the drinking water.

Recommended* 3 - 4 grams per livestock unit (cattle and game) per day.

Recommended* 1 - 2 grams per livestock unit (sheep and goats) per day.

* Varies according to nature of vegetation browsed or grazed per day.

PACK SIZES

1 kg
4 kg
10 kg
25 kg

BROWSE PLUS®

Reg. No. V11013 (Act 36/1947), Namibia Reg. No. N-FF 0482

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FOR ANIMAL USE ONLY

Class: Digestive modifier. Composition: Polyethylene Glycol 930 g, Excipients 70 g, (Polyvinlpyrrolidone/Calcium Hydroxide/Dry powdered molasses stillate)

Virbac

Shaping the future of animal health

BROWSE PLUS®

DIGESTIVE MODIFIER TANNIN INHIBITOR

Give them a healthy appetite during unfavourable times.

If it doesn't say **BROWSE PLUS** on the outside....
Then it's not **BROWSE PLUS** on the inside!

Utilise all available plant material with **BROWSE PLUS** Digestive Modifier and Tannin Inhibitor

For more than two decades **BROWSE PLUS** has been successfully making unpalatable plant material palatable again. Added to drinking water or feed it encourages the browsing of existing plant material during unfavourable times.

Proven to be safe and environmentally friendly, it works by:

- Restoring normal gastro-intestinal function
- Restoring rumen function and increasing microbial populations
- Neutralising the negative effects of tannins and terpenes

Virbac

Shaping the future of animal health

What is BROWSE PLUS?

During unfavourable periods, the intake of roughage in the form of grass, bush or crop residues is important. Because the rumen microbe populations of livestock/wildlife are reduced over this period, the ability of the digestive system to process dry roughage and extract nutrients is limited.

BROWSE PLUS is an orally administered formula for domestic and wild animals. The formula is a digestive modifier having multiple modes of action, of which the neutralising of polyphenolic anti nutrients, in particular tannins and lignified plant material, is the principal action. Additional modes of action include to counter the chelating effects of tannins on a range of micronutrients such as zinc, copper, selenium and cobalt; the restoration and promotion of rumen microbial populations; and the restoration of normal gastro-intestinal function.

Improved Digestion = efficient nutrient utilisation

For more than two decades, BROWSE PLUS has been successfully increasing palatability of plant material. Added to drinking water or feed it encourages the browsing and digestion of existing plant material during unfavourable times.

What is BROWSE PLUS made up of?

Polyethylene Glycol (PEG)

PEG reacts against condensed tannins by -

- Breaking down the bond between protein and tannin.
- Binding with tannin.
- Releasing protein for digestion.

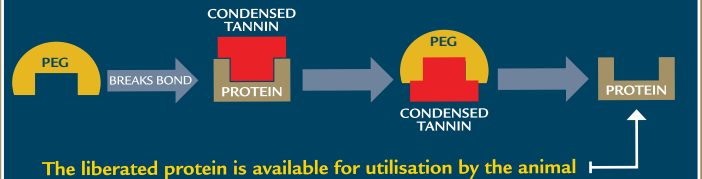
PEG promotes rumen microbes and thus rumen function:

- Tannin kills microbes because they do not get proteins.
- Available rumen-degradable proteins promote microbe growth.
- Available proteins promote performance of microbes and general rumen function.

PEG prevents inflammation of the rumen wall:

- Tannins leads to inflammation and erosion of the rumen wall.
- Polyethylene glycol bonds with tannin.
- Bound tannin cannot end up in the bloodstream.

Polyethylene Glycol – PEG



The liberated protein is available for utilisation by the animal

Ethyl Concentrate – MDDS

Restores rumen microbe populations

- Pronounced effect on restoration of rumen microbe populations by supplying microbes with vital nutrients.

Polyvinyl Pyrrolidone – PVP + Calcium Hydroxide – $Ca(OH)_2$

PVP together with $Ca(OH)_2$ act against hydrolysable tannins and resins

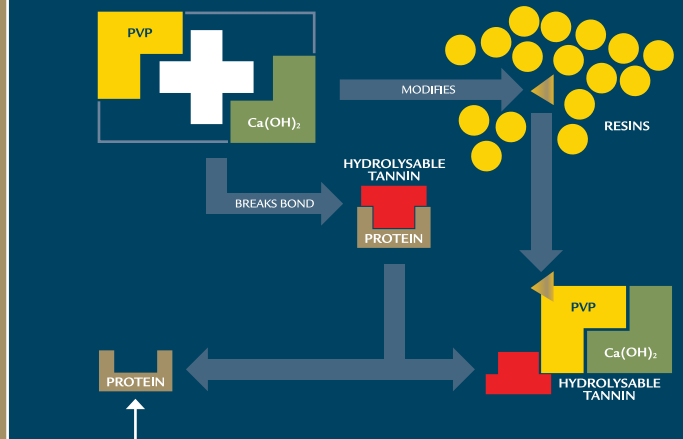
- PVP together with $Ca(OH)_2$ forms a preferential bond with hydrolysable tannins and acts in much the same way as PEG. In this state hydrolysable tannins are not metabolised and consequently the toxic metabolites such as pyrogallol and pyrochatechin are not produced, preventing systemic toxicity.
- The liberated protein is available for utilisation by the animal.
- PVP together with $Ca(OH)_2$ prevents the complexing of hydrolysable tannins with pepsin (a proteolytic digestive enzyme produced by the animal), a process which prevents effective digestion.

PVP together with $Ca(OH)_2$ prevents toxicity of terpenes

- Some terpenes act adversely on the digestion and result in toxicity.

$Ca(OH)_2$ known to reduce excessive gastric acid

Polyvinylpyrrolidone – PVP + Calcium Hydroxide – $Ca(OH)_2$



The liberated protein is available for utilisation by the animal

Residues

PEG and PVP

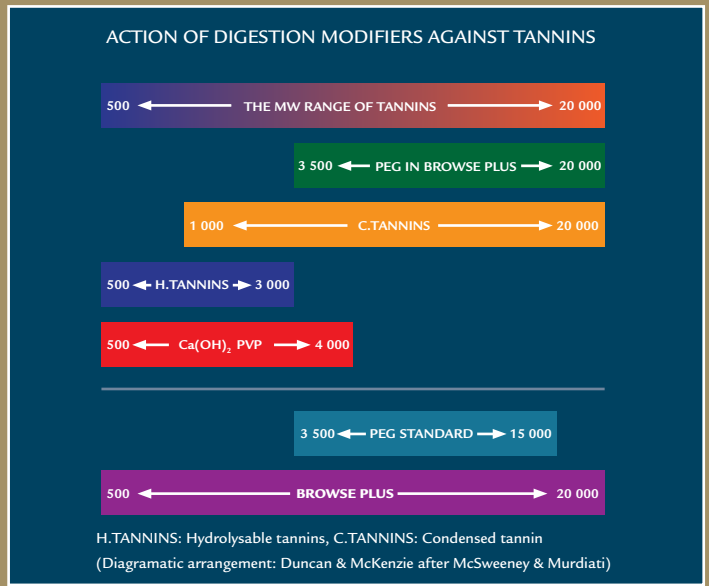
- Are not absorbed from intestinal tract of treated animals, therefore, no residues in meat, blood or milk.

Ethylene Concentrate

- Is a molasses related product which consists mainly of sugars, some proteins and other nutrients. It is metabolised in the normal fashion.

Calcium Hydroxide

- Is not usually considered a nutrient as such, but may provide small amount of calcium which could be absorbed.



H.TANNINS: Hydrolysable tannins, C.TANNINS: Condensed tannin

(Diagramatic arrangement: Duncan & McKenzie after McSweeney & Murdiati)