

VERIFICATION STATEMENT

GLOBE Performance Solutions

Verifies the performance of

Rumensin®

Developed by Elanco Canada Limited
Guelph, Ontario, Canada

Registration: **GPS-ETV_VR2019-11-30**

In accordance with

ISO 14034:2016

**Environmental Management —
Environmental Technology Verification (ETV)**



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November 30, 2019
Vancouver, BC, Canada



Verification Body
GLOBE Performance Solutions
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Performance claim(s)

The specific claims that have been verified are as follows:

- 1) When Rumensin® is administered to cattle at a level of 24 ppm, methane gas emissions are reduced by 20%.
- 2) When Rumensin® is administered to cattle at a level of 335 mg/day, fecal nitrogen levels are reduced by 20% in the post-calving (i.e., lactating) period.

Performance conditions

The nature of testing used to demonstrate the performance claims was of a non-standard nature (i.e., was conducted according to research and development experimental design). The cattle tested were maintained under research conditions typical for commercial dairy herd production. Researchers either orally administered the Rumensin® in controlled release capsules to cattle or added the premix formulation of Rumensin® directly to the cattle feed.

Technology Description and Application

Rumensin® is used extensively in animal agriculture worldwide to improve feed efficiency and to control Coccidiosis (a parasitic intestinal infection). When administered orally to cattle, Rumensin® improves feed efficiency by altering the digestive process. Specifically, Rumensin® enhances the natural process of fermentation in the rumen. Rumensin® acts on rumen microorganisms in a manner that enhances the production of propionic acid and reduces the production of methane, resulting in a higher recovery of dietary energy in a form usable to cattle. In addition, Rumensin® reduces the microbial breakdown of dietary protein (nitrogen) and the resulting production of ammonia within the rumen. This increases the amount of dietary protein that reaches the intestine where it can be digested, absorbed and utilized by the animal. The net impact of these effects on rumen microorganisms is to increase the efficiency of feed utilization, thereby reducing production costs for farmers. In addition to its effects on rumen microorganisms, Rumensin® is highly effective in the prevention of a disease-causing protozoa known as coccidia. These organisms cause intestinal infections in cattle that result in diarrhea, decreased productivity and death, particularly in young animals, and can therefore be responsible for significant economic losses to beef and dairy farmers.

Rumensin® is administered to cattle in two forms: a feed additive premix, which is combined with feed, and a plastic controlled release capsule (Rumensin® CRC), administered orally via a specialized administration tool.

Rumensin® premix is administered to beef cattle (steers and heifers) fed in confinement for slaughter at the rate of 33 g/tonne complete feed for improved feed efficiency, to cattle at 22 g/tonne complete feed for prevention of Coccidiosis, to growing cattle (slaughter, stocker and feeder cattle, and beef and dairy replacement heifers) greater than 180 kg at 200 mg/head/day as a medicated supplement for increased weight gain, to lactating dairy cows for reduction of milk fat percentage and for improving feed efficiency of milk protein production at 16 to 24 g/tonne, and to dry and lactating dairy cows for minimizing loss of body during lactation at 8 to 24 g/tonne.

The Rumensin® CRC contains 32 g/capsule of monensin and delivers approximately 270 mg per day for 120 days in pastured growing cattle and approximately 335 mg per day for 95 days in lactating dairy cattle. It is administered to growing cattle, weighing up to 350 kg, on pasture containing legumes for reducing the incidence of bloat and bloat associated mortality (i.e., excessive gas accumulation in the rumen), for the prevention of subclinical ketosis in lactating dairy cattle, and for the prevention of Coccidiosis in cattle weighing up to 350 kg. Both forms deliver the same active ingredient.

Long Term Effects of Rumensin®

When the Rumensin® performance claim verification was completed the long-term effects of feeding Rumensin® on methane reduction had not yet been fully investigated. A question has been posed whether the effect of Rumensin® will be persistent in methane reduction. As a result, a study was conducted at the Elora Dairy Research Centre, University of Guelph (Guelph, ON, Canada). The objective of the study was to determine effect of six months of dietary supplementation of Rumensin® (24 mg Rumensin® Premix/kg of dry matter) on methane emissions from lactating Holstein dairy cows. The results suggested that methane reduction in lactating dairy cows was persistent up to six months, i.e. the duration of the study (Odongo et al. 2007). The study has been published in the Journal of Dairy Science Vol 90. No. 4, 2007.

Verification

This verification was first completed in September, 2001 and has been considered valid for subsequent renewal periods every three (3) years thereafter. The initial verification was completed by ESG International Inc. (Guelph, Ontario) using the General Verification Protocol (March, 2000).

The applicant selected a review of existing analytical data, as the basis for the verification. The effects of Rumensin® on rumen microorganisms are directly responsible for the beneficial impacts on the environment that form the basis for this verification: reduced production of methane gas and reduced fecal nitrogen excretion. This effect is well documented both in vivo and in vitro (Bagg, 1997; Schelling, 1984; Sauer et al., 1998).

This ETV renewal is considered to meet the equivalency of an ETV verification completed using the International Standard *ISO 14034:2016 Environmental management – Environmental technology verification (ETV)*.

What is ISO 14034:2016 Environmental management – Environmental technology verification (ETV)?

ISO 14034:2016 specifies principles, procedures and requirements for environmental technology verification (ETV) and was developed and published by the *International Organization for Standardization (ISO)*. The objective of ETV is to provide credible, reliable and independent verification of the performance of environmental technologies. An environmental technology is a technology that either results in an environmental added value or measures parameters that indicate an environmental impact. Such technologies have an increasingly important role in addressing environmental challenges and achieving sustainable development.

For more information on Rumensin® Technology please contact:

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Limitation of verification - Registration: GPS-ETV_VR2019-11-30

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