

Lumance®

Intestinal health solution to lower medication and improve performance

Gut Health

Intestinal health is the most determining factor for animal health in general, herd performance and eventually farm profitability. Pathogenic bacteria may colonise the gastrointestinal tract and result in clinical and sub-clinical disease. Reduced feed intake and daily gain, inactivity and decreased social interactions are all observed in animals with bacterial infections.

Livestock producers are often forced to make use of unconventional protein and carbohydrate sources or materials of **lower quality**. This means that animals are constantly challenged with changing diet compositions and quality, which cause risks for their health.

Stress often leads to health challenges and intestinal disorders and is linked with the **'leaking gut' syndrome**. The end-product is **subclinical inflammation which can cost up to 30% of the animal's energy requirements**.

Regulation, food safety and animal welfare are also setting up new trends towards limitations or restrictions of antibiotic usage for disease treatment, medicated feed, zinc oxide etc.

By controlling the microflora in the lumen and strengthening the intestinal epithelium integrity, Lumance® offers a comprehensive **GUT HEALTH MANAGEMENT** program that aims at reducing medication or cocktails of medication.

Lumance® is a complex structure, which contains the newest generation of butyrate, combining slow release and protection technologies, ensuring that acids, medium- chain fatty acids, essential oils, anti-inflammatory compounds and polyphenols are delivered in a gut active way for powerful and effective antibacterial control, high quality tight junctions,

neutralisation of the produced ROS and tempering of the inflammatory cytokine production.

Lumance® is an effective and powerful tool to reduce inflammation, promote villi growth, tighten the intestinal junction and stabilise the microflora.



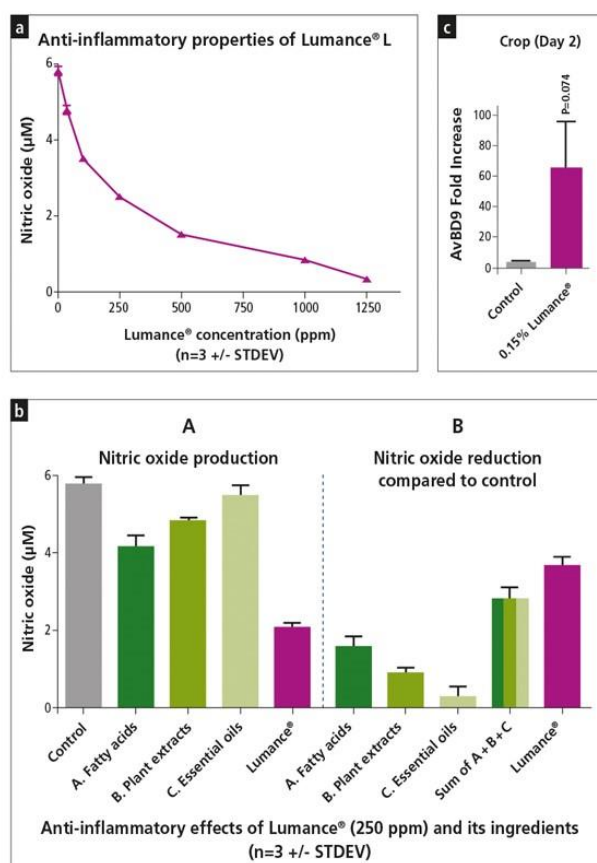
Modes of Action

1. Reinforce gut integrity

- Stimulates the growth of villi
- Reinforces the intestinal defense
- Enhances the intestinal barrier

2. Reduce inflammatory response

The anti-inflammatory properties of butyric acid are complemented by plant extracts rich in alkaloids and essential oils found in the unique Lumance® recipe. Their efficacy and synergistic effect were demonstrated both in vitro and in vivo.



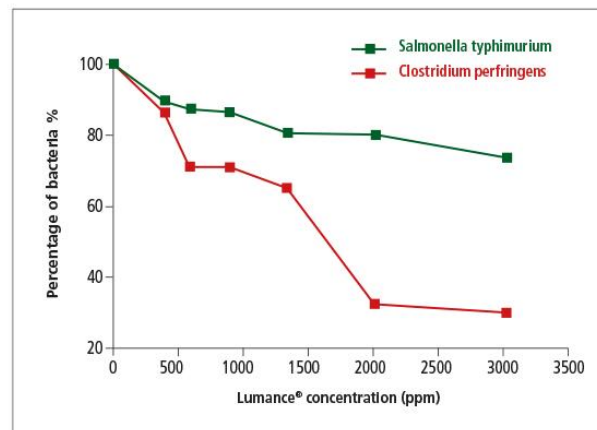
a) In vitro inhibition of LPS induced inflammation in macrophage producing cell lines by **Lumance®** expressed as **reduction of Nitric Oxide**,

b) Demonstration of the **synergistic effect of Lumance®**

c) In vivo demonstration of the **anti-inflammatory effect of Lumance®** (gene expression of the chicken Host Defense Peptide, β -defensin 9 - AvBD9)

3. Balance the lumen and its gastrointestinal microflora

Lumance® has been carefully designed to reduce the impact of pathogens and support the growth of beneficial bacteria. The graph below shows the direct antibacterial effect of Lumance in vitro against a) *Clostridium perfringens* and b) *Salmonella Typhimurium*



The direct antibacterial effect of Lumance® in vitro against *Clostridium perfringens* and *Salmonella typhimurium*.

4. Protect against ROS

Butyrate along with the plant extracts and essential oils added in Lumance® have been selected for their antioxidant activity and oxidative stress inhibitory effect.