



# TRACE MINERALS FOR RUMINANTS: essential nutrients or rumen inhibitors?

**Although trace minerals, such as copper, zinc, and manganese, occur only in very low concentrations in the body of animals, they are of great importance for optimal health and performance.**

As a part of specific enzymes, these nutrients fulfil essential roles in different biological processes, related to immunity, fertility, production, and claw-health. When milk production is high, a considerable amount of trace minerals is also secreted with the milk, leaving less minerals available for the cow's metabolic process. Roughages will usually not contain enough trace minerals to fulfil requirements, especially not for high-producing animals. Therefore, supplementation of trace minerals to the diet is needed to avoid deficiencies and associated health issues. For this supplementation, different sources of trace minerals are available. Characteristics such as solubility and bioavailability can differ between sources and, to guarantee an optimal and safe trace mineral supply, it's important to choose a high-quality trace mineral source.

## SMART HYDROXY TRACE MINERALS – A TOP QUALITY SOURCE

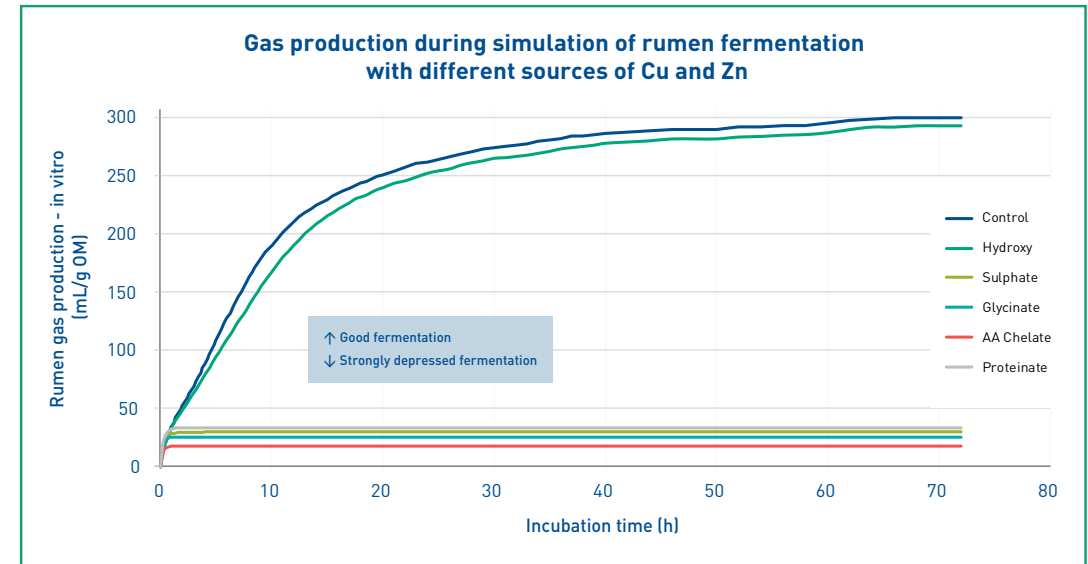
Trace mineral sources with weak bonds, such as sulphates, are highly soluble in water and will easily release their active trace mineral. Released trace minerals are reactive and can degrade other nutrients, form complexes reducing their uptake, or exhibit antimicrobial actions. Good rumen health is required for optimal performance of dairy cows. Soluble trace element sources, which already release their reactive compound in the rumen, are a possible risk for this rumen health.

Hydroxy trace minerals are characterised by a low solubility in neutral pH environments such as

the rumen. Thanks to their crystalline structure with strong intramolecular bonds, the hydroxy trace minerals provide a low reactivity in the rumen. Only after passage through the acidic environment of the stomach, hydroxy trace minerals become soluble. Their active elements release slowly during passage in the intestinal tract, where they can be absorbed by the animal. This slow release ensures less reactivity and complex formation, and an optimal availability for the animal.

In a recent laboratory trial, the safety of Orffa's Excential Smart Hydroxy Trace Minerals for rumen health was demonstrated. During a simulation of rumen fermentation, different sources of copper and zinc were tested for their influence on the production of volatile fatty acids and gas, both signs of good fermentation. As shown in the graph, copper and zinc from sulphates resulted in a severe decrease of gas production. A strongly depressed fermentation was also seen for the other three tested organic sources of copper and zinc (glycinate, amino acid chelate, and proteinate complex). Smart Hydroxy Trace Elements were the only source that did not disturb gas production, resulting in a similar gas production curve as the control, which was not supplemented with copper and zinc. The negative influence on fermentation of the sulphates, glycinate, amino acid, and proteinate complexes suggest an impaired efficacy of the rumen microbiota. Soluble, reactive copper and zinc have toxic antimicrobial effects and inhibit rumen fermentation which can result in lower animal performance and health.

Hydroxy trace minerals (Excential Smart range by Orffa) are the safest trace mineral choice for good rumen fermentation. Moreover, the slow release of the active element at the right place, at the right time, contributes to an optimal availability. As a



result, in various animal trials, both under practical and controlled conditions, hydroxy trace minerals show higher rumen fermentation, dry matter digestibility, milk production, (claw) health, and

fertility in cows. Excential Smart is a high-quality range of trace minerals with no implications for rumen functioning, that provides your animals with these essential nutrients in an optimal way.



## EXCENTIAL SMART TRACE MINERALS

High bio-available hydroxy trace minerals for optimal health and performance



**SMART TRACE MINERALS**

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- High quality trace minerals
- Safe for rumen microbiota

*“Smart cows choose for Orffa's Excential Smart as safest source of trace elements.”*

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