

MAXACTIVAT

ACTIVATED ZINC AND COPPER OXIDE

MAXACTIVAT products are innovative zinc and copper oxides, that have been activated in a special physical production process. **MAXACTIVAT** products assist in controlling post weaning diarrhea in piglets, even when supplemented according to progressive feed nutrient regulations. In dairy calves, **MAXACTIVAT** products can improve the immune status and performance parameters.

ENERGIZING THE OXIDE MOLECULE

PROVITA SUPPLEMENTS has succeeded in activating feed grade zinc and copper oxide through a novel technology that modifies its functional properties, particle size, and surface area, causing an increase in the stored internal energy in the molecule (see F1). This, in turn, improves the physiochemical properties of **MAXACTIVAT** products, making them more reactive during ingestion by the animal. It's simply a much more active and effective form of ZnO and CuO.

MAINTAINING ANIMAL HEALTH AND WELFARE

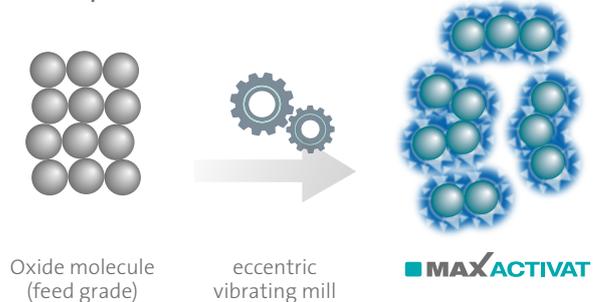
Conventional Zinc and Copper sources have been added at therapeutic levels in young animal diets over years, as it has proven to reduce the incidence of diarrhea. However, metal concentration and source can affect the animal metabolism and performance negatively as well as increasing heavy metal contamination of the environment. Therefore, therapeutic levels of ZnO and CuO have been banned in the



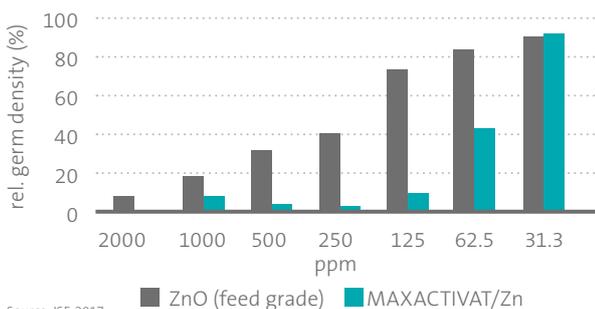
MAXACTIVAT

- Improved gut integrity and immune status
- Manages pathogens in the gut
- Helps limit diarrhea in young animals

F1: Principle of mechanical activation



F2: Density of *E. coli* germs after 24 hours incubation in dependency of ZnO source and dosage.



Source: ISF, 2017

EU. Reducing trace mineral excretion and maintaining animal health could only be implemented by reconsidering diet formulation.

Due to its increased reactivity, **MAXACTIVAT** products have been proven to be suitable feed ingredients that make the difference in innovative feeding concepts. In-vitro research shows that when applied within the legal feed levels of ≤ 150 ppm Zn or Cu, **MAXACTIVAT** products suppress pathogens more effectively than commercial feed grade oxides at higher dosages (F2). Furthermore, specially activated metal oxides showed a clear impact on gut function and feed intake as well as improvement of zootechnical performance in piglets and calves.

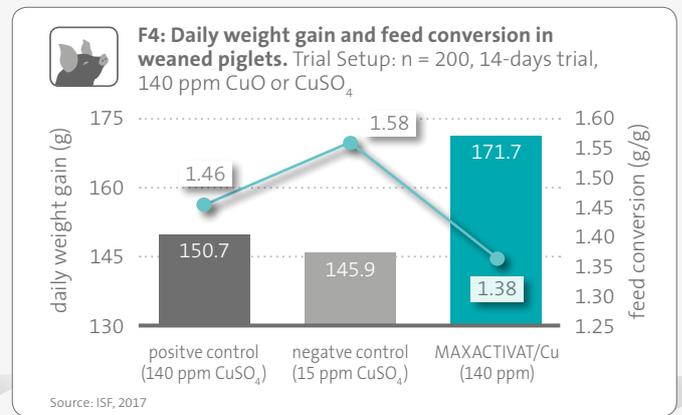
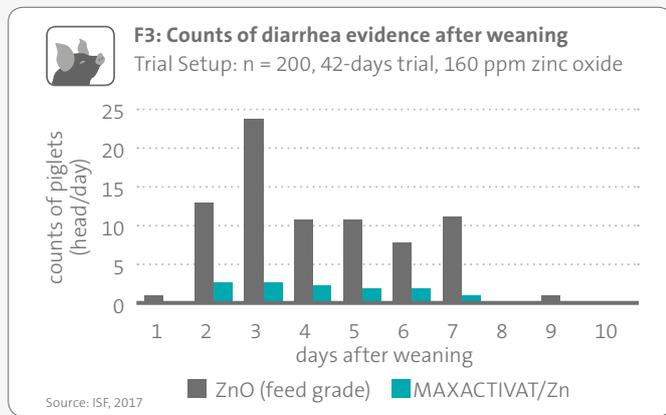
PERFECT COMPONENTS. MAXIMUM RESULTS.

THE ALTERNATIVE TO HIGH-DOSE ZNO//CUO-SUPPLEMENTATION

CONVINCING RESULTS IN PIGLET NUTRITION

MAXACTIVAT products were extensively tested in-vivo. A feeding trial was carried out to assess the effect of MAXACTIVAT/Zn supplementation on the incidence of diarrhea in weaned piglets. A basal diet was fed with 160 ppm ZnO (feed grade) for the control and 160 ppm MAXACTIVAT/Zn for the treatment group. The consistency of the feces was assessed daily according to a defined evaluation scheme. As shown in F3, animals fed with MAXACTIVAT/Zn had a lower probability of suffering from diarrhea. Furthermore, daily weight gain was improved by 27% and FCR was about

17% lower. A similar trial was carried out in order to test the effect of MAXACTIVAT/Cu on performance parameters of weaned piglets (see F4). While all three groups received 120 ppm of MAXACTIVAT/Zn, control groups received 15 ppm (negative) and 140 ppm (positive control) of CuSO₄. The treatment group received 140 ppm MAXACTIVAT/Cu. After 14 days, average daily weight gain and feed conversion were improved compared to the control groups, proving the positive effects of MAXACTIVAT/Cu on digestive performance in weaned piglets.



SECURED IMMUNE STATUS IN SUCKLING CALVES

In two trials with 40 calves each, the effect of MAXACTIVAT/Zn supplementation during suckling phase was tested in comparison to standard ZnO. For the first trial, the calves were allotted to two groups and fed a milk replacer supplemented with 100 ppm feed-grade ZnO (control) and 100 ppm ZnO MAXACTIVAT/Zn for the treatment

group. In trial II, the dosage was in-creased to 135 ppm ZnO per group. As shown in F5, the calves that received MAXACTIVAT/Zn proved to be more robust, requiring fewer therapeutic treatments. In addition there was a positive effect on zootechnical parameters, such as daily weight gain and feed conversion.

