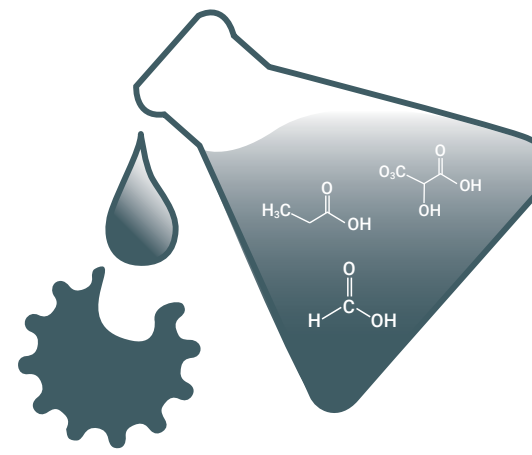


MAXACID

MAXACID - ACID MIXTURES FOR EVERY NEED



The MAXACID program offers acid mixtures for a wide range of applications in animal nutrition, feed hygiene and cereal preservation. It comprises not only classic mixtures of organic acids (formic acid, lactic acid, propionic acid, etc.) but also special products such as monoglycerides (MAXACID/MCM) and monobutyryl (MAXACID/MB).

MAXACID increases the barrier function and reduces potential pathogens like gram-negative and gram-positive bacteria in the gastrointestinal tract. This leads to increased feed intake and more efficient feed conversion of the animals. Unlike the use of a single acid, the combination of several acids provides a broad spectrum of activity throughout the animal. The MAXACID portfolio can be used to affect different sections of the gastrointestinal tract in various species (Fig. 1).



CHARACTERISTICS

- Highly effective against pathogens
- Supports beneficial intestinal bacteria
- Improves feed and water hygiene

APPLICATION BENEFITS

- Tailor-made acid mixtures
- Granulate or liquid, buffered or sharp
- Water and feed application

F1: Characteristics and target site of organic acids.

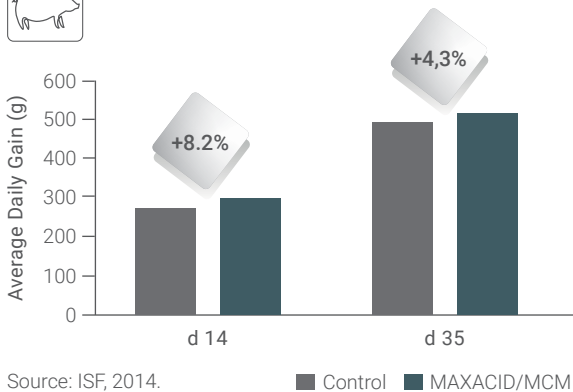
| | | Citric acid | Formic acid | Lactic acid | Acetic acid | Propionic acid | MCM (C8, C10 & C12) |
|--------------------------|-------------------------------|-------------|-------------|-------------|-------------|----------------|---------------------|
| physical characteristics | biological activity at pH 4.5 | 3.7% | 15% | 19% | 64% | 71% | independent |
| | spectrum of activity | | | | | | |
| | bacteria | + | + | + | + | + | + |
| | yeasts | | + | | + | + | |
| | special action | | | | | | + |
| site of action | crop/stomach | | | | | | |
| | small intestine | | | | | | |
| | colon | | | | | | |
| site of action | mouth/esophagus | | | | | | |
| | stomach | | | | | | |
| | gut | | | | | | |

INNOVATIVE MONOGLYCERIDES TO IMPROVE PERFORMANCE IN PIGLETS

Animals: Piglets (Duroc x DanAvl; n=50), weaned at 26 d
Treatments: (1) Control
 (2) MAXACID/MCM (1,040 ppm MAXACID/MCM)



F2: Average daily gain of piglets.



MAXACID/MCM

The esterification of medium-chain fatty acids (MCFA) with glycerol generates monoglycerides (MCM). MAXACID/MCM combines the properties of monocaprylin (C8), monocaprin (C10) and monolaurin (C12) reducing potential pathogenic bacteria, such as *Clostridium*, *Streptococcus*, *Escherichia coli* and *Salmonella* independent of pH value in the gastrointestinal tract. MAXACID/MCM can be used in low dosages.

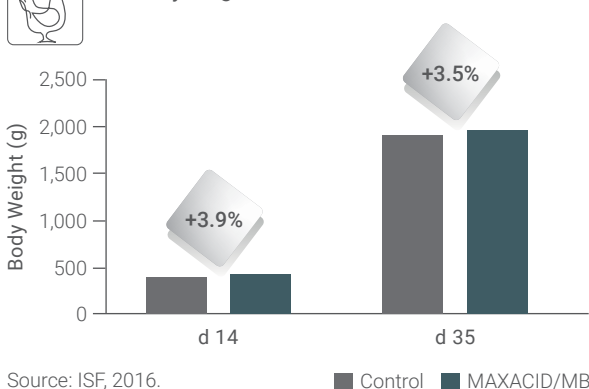
The average daily gain was numerically greater and resulted in a greater final body weight for MAXACID/MCM compared to Control for both trial periods. **The reduction of pathogens in animals with the use of MAXACID/MCM leads to improved growth performance.**

IMPROVED GROWTH RATE IN BROILER

Animals: Broiler (Ross 308; n=183-328), d 1-35
Treatments: (1) Control
 (2) MAXACID/MB (3,400 ppm MAXACID/MB)



F3: Body weight of broiler.



MAXACID/MB

MAXACID/MB is an odor-free compound of mono- and diglycerides of butyric acid (C4). In addition to its use as an energy source, the MAXACID/MB also has a pH-independent antibacterial effect. Furthermore, it affects the proliferation of epithelial cells and the abundance of potentially beneficial bacteria such as lactobacilli in the gastrointestinal tract.

The body weight was numerically greater for MAXACID/MB compared to Control for both trial periods. **This confirms that the additional energy and the antibacterial effect of MAXACID/MB improve the growth performance of the animals.**