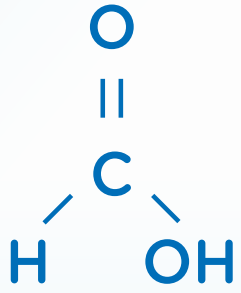
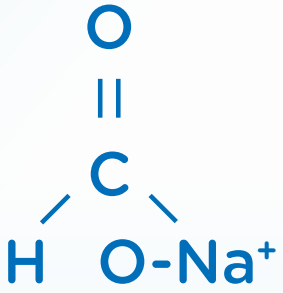
FEED HYGIENE WITHOUT COMPROMISE WITH MILLGUARD ENTERO

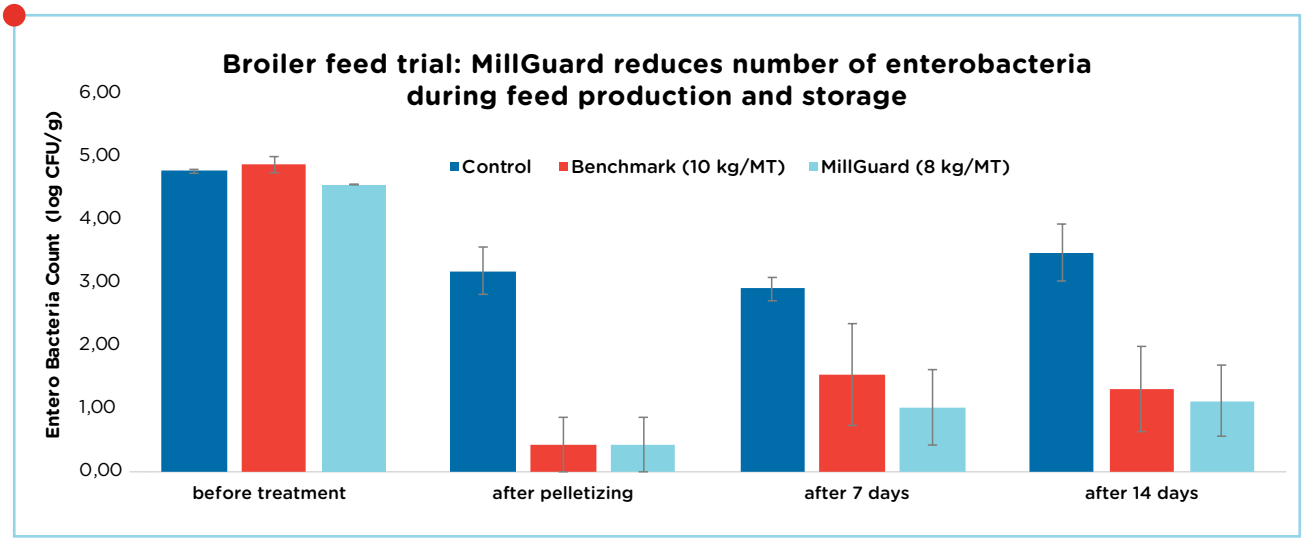


To prevent contamination with enterobacteria such as Salmonella, feed mill operators rely on biosecurity, heat treatment and organic acids. Organic acids provide additional protection by reducing microbial load during both processing and feed storage, helping to prevent recontamination. Due to the corrosive nature of organic acids, safety risks increase and equipment lifetime decreases.

WHY A NEW SOLUTION?

To reduce corrosiveness, organic acids are often replaced or diluted with acid salts, significantly reducing antimicrobial activity. MillGuard Entero solves these challenges by combining high antimicrobial activity with low corrosiveness. MillGuard Entero contains formic acid and essential oils for rapid inhibition of enterobacteria. The addition of lignosulphonic acid greatly reduces corrosiveness without compromising the antimicrobial efficacy of formic acid.

PURE ACID (Formic Acid)	ACID SALT (Sodium Formate)	MILLGUARD ENTERO
		
✓ Effective	✗ Less effective	✓ Effective
✗ Highly corrosive	✓ Non-corrosive	✓ Non-corrosive



MILLGUARD ENTERO WAS THOROUGHLY TESTED FOR EFFICACY AND SAFETY

Production trial: MillGuard Entero matched the performance of a market benchmark at a lower inclusion rate.

MIC (Minimum Inhibitory Concentration) tests: MIC testing at Utrecht University on Salmonella Infantis showed MillGuard to be at least as effective as 85% formic acid, confirming its strong antimicrobial efficacy through combining organic acids and essential oils.

Validated in broilers: A study confirmed that MillGuard has no negative impact on feed intake or performance, even at dosages up to 12 kg/MT.

HOW DOES IT WORK?

The mode of action combines three key mechanisms:

- Formic acid combines favorable molecular properties with strong antimicrobial activity.
- Essential oils disrupt bacterial cell membranes securing optimal formic acid penetration.
- Lignosulphonic acid protects against corrosion and irritation by forming a protective layer on contact surfaces.

The protective effect of the lignosulphonic acid can be seen in the reduction of corrosion, also contributing to the safety of operating staff and minimizing the impact on plant equipment.

Corrosion Tests results (on Carbon Steel C1018)	Average Corrosion rate (mm/year)
MillGuard	0.8
Formic Acid 85%	8.4



MILLGUARD ENTERO FITS ALL PRODUCTION FACILITIES

MillGuard Entero Liquid is packed in IBC's for easy connecting into the production line. It is also avaliable as a bagged, dry variant, put on a silica carrier for easy dosing in the production process: MillGuard Entero Dry. Recommended dosage is between 2 and 8 kg/MT complete feed. For more details and advice, contact your Koudijs sales advisor.

Feeding ***Performance***

koudijs

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