GUT H3ALTH SOLUTIONS
CLEAN UP

KEM SAN®

LIQUID ANTIMICROBIAL: PATHOGEN CONTROL FOR WATER

Designed specifically for pathogen control in livestock and poultry water, KEM SAN® is a unique combination of organic acids buffered to an optimal pH range of 4.7-5.7. EPA registered and proven safe and effective, KEM SAN optimizes the effectiveness of chlorine, bacterial control and overall handling by farm personnel.

WATER: AN ESSENTIAL NUTRIENT

High-quality drinking water is essential to animal health and performance, so providing clean water should be a top priority for producers. Organic acids can be used to control, inhibit and eliminate bacteria in drinking water, reducing pathogen exposure to the upper gastrointestinal tract of the animal. KEM SAN provides an effective blend of key organic acids with proven efficacy against a broad range of pathogenic bacteria.

MODE OF ACTION: HOW DO ORGANIC ACIDS WORK?

STEP 1

Intact organic acid (undissociated; RH) passively diffuses across bacteria's cell walls and/or lipid membranes.

STEP 2

Once inside the bacteria cell, the organic acid (RH) dissociates, increasing levels of H^+ ions (protons).

STEP 3

Bacterial intracellular pH rapidly drops.

STEP 4

In an attempt to stabilize pH, bacterium depletes its energy reserves (ATP) and ultimately dies trying to remove excess H^+ ions.

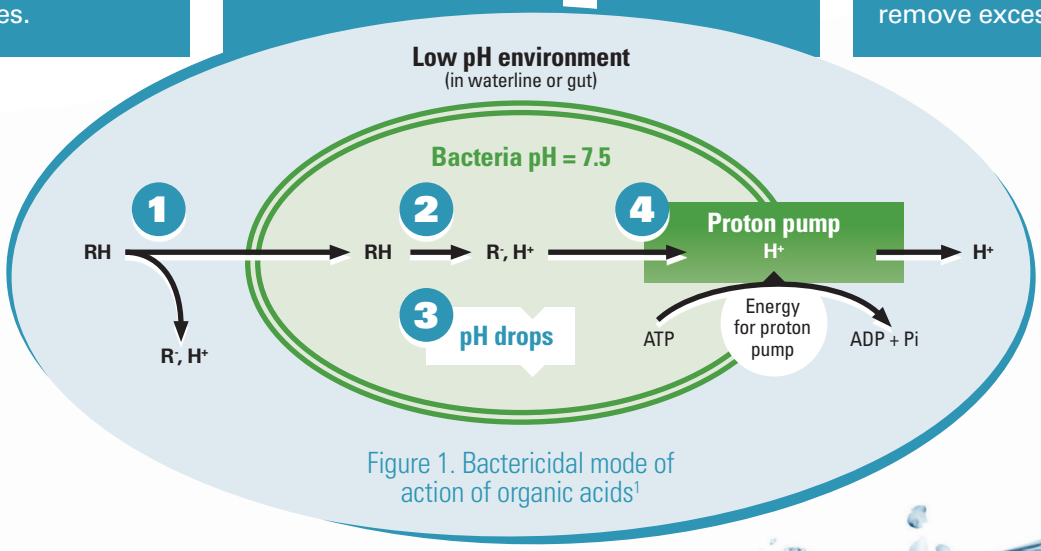

Figure 1. Bactericidal mode of action of organic acids[1]

LEARN MORE AT **kemin.com/kemsan**

KEM SAN FEATURES AND BENEFITS: PATHOGEN CONTROL FOR WATER

- Buffered to the ideal pH range of 4.7-5.7, which allows the acid to enter the cell and effectively deplete the energy reserves in the bacteria
- Removes biofilm from watering systems that may harbor pathogens
- Highly effective against a wide variety of pathogenic bacteria, including:

Escherichia coli ***Salmonella*** ***Staphylococcus*** ***Pseudomonas*** ***Clostridium perfringens***

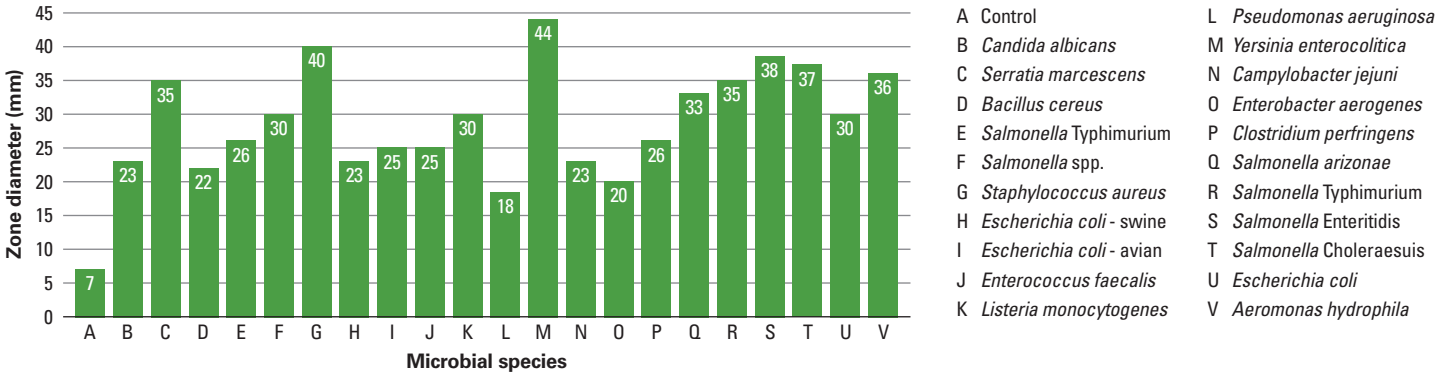

Figure 2. Relative effects of KEM SAN® in inhibiting the growth of various organisms.[2]

30 milliliters of KEM SAN were added to 5-millimeter-diameter paper disks. These disks were added to plates inoculated with stock culture of the various organisms and incubated in triplicate. The diameter of the inhibition areas was measured 24 hours post inoculation and averaged. Larger diameters of inhibition represent higher sensitivity of the bacteria to KEM SAN.

RECOMMENDED USE OF KEM SAN

- Sanitize drinking lines prior to placement of livestock and poultry
- Reduce pathogen load in drinking water at placement and during high stress periods
- Use continuously under normal conditions or intermittently during periods of stress

		STOCK SOLUTION		
KEM SAN® use	**Concentration (oz/gal)**	**Parts of KEM SAN®**	**Parts of tap water**	**Meter into drinking water at a rate of**
Drinking water	0.33	1	2	1:128*
Line cleaning	1.00	1	0	1:128*

*1:128 equals 1 ounce of stock solution per 128 ounces (1 gallon) of water.

Note: When cleaning water lines, proper flushing is required to avoid clogging.
Note: Do not mix directly with chlorine. Do not mix with water soluble vaccines.

Figure 3. KEM SAN® application guidelines

KEMIN®

Learn more at **kemin.com/kemsan**.

Adapted from
1. Adams, C. A. (1999). Nutricines: Food Components in Health and Nutrition. Nottingham University Press.
2. Bacterial Susceptibility of Various Organisms to KEM SAN Brand Liquid Antimicrobial, TL-11-00089.

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