



## Stop antibiotic resistance!

Antibiotics have become an integral part of today's livestock production. The indiscriminate use of antibiotics in animal agriculture has been subjected to a critical scrutiny by governments but also by consumers. Consumers worldwide increasingly want healthy food from antibiotic-free raised animals, preserving for as long as possible the ever-diminishing arsenal of antimicrobials effective in humans. How can we responsibly use antibiotics in animals without compromising food safety and human health, as well as animal health, welfare and productivity? In 2000 the Nuscience R&D division already invented Aromabiotic Medium Chain Fatty Acids (MCFA). Ever since, Nuscience's experiences help feed millers, integrators and farmers, all over the world to improve their feed and avoid the excessive use of antibiotics. Results show improved animal health combined with maximized growth performances.

### STOP ANTIBIOTIC RESISTANCE



### START USING AROMABIOTIC® MCFA.

### Aromabiotic fulfills where antibiotic falls short

In the low pH environment of the stomach, un-dissociated MCFA molecules are capable of penetrating the phospholipid bilayer of the bacterial cell membrane, thereby destabilizing it. Inside the bacterial cell, MCFA's encounter a near-neutral environment resulting in accumulation of dissociated MCFA molecules and protons in the bacterial cytoplasm. Intracellular acidification will eventually lead to killing of the bacterium. Aromabiotic MCFA's not only show lower minimal inhibitory concentrations when compared to SCFA and LCFA, the free MCFA provide an **early pathogen barrier already in the stomach** of the animal, compared to MCFA esters which only release free MCFA in the intestinal tract by gut lipases. Even at non-bactericidal concentrations, MCFA's can have a dramatic effect on pathogen persistence. By reducing the virulence of bacterial pathogens, the outcome of

disease is altered and intestinal and systemic colonization is reduced, as shown in scientific trials. The combination of these antibacterial actions will result in a beneficial microbial ecosystem and thus a higher villus/crypt ratio favouring the digestive and absorptive capacities of the intestines. Next to promoting gut health, Aromabiotic MCFA's have a **positive influence on the immunity** of the animal. White blood cells (neutrophils) remain more active making the animal also more resistant against non-digestive disorders.

Find out in the **coming white papers** how we create economic value for the industry and ensure healthier food for the consumer!



Can Aromabiotic enhance the effect of antibiotics after weaning in piglets? In the following White paper of **October** you will learn more about the effect of Aromabiotic in comparison with and on top off antibiotics. Aromabiotic and piglets: a healthy combination!!!



In 2006, 96 % of all slaughtered birds in the world were treated for digestive disorders with an antibiotic. This is a big treat for the human population, since resistance may occur. Find out in the White paper of **November** what Aromabiotic Poultry can mean for your poultry business!



Did you know that blood neutrophils are responsible for 90% of the total somatic cell count in case of an infection? In a normal situation this is no more than 30%. In our White paper of **December** you will find out about the positive effect of Aromabiotic Cattle on blood and milk neutrophils.

