

## Essential Oils Can Assist With Livestock Digestion

Kansas State University researchers have found that essential oils can play a role in livestock health.

Essential oils are removed from plants and distilled into concentrated forms that distributors say support immunity and other functions of the body.

In a study, professors [Evan Titgemeyer](#) and [T.G. Nagaraja](#) found that limonene, which is in lemon oil, and thymol, which is in thyme oil, help combat a harmful bacterium in cattle stomachs. The bacterium, *Fusobacterium necrophorum*, makes dietary protein less available to the animal.

The results have been published in the [Journal of Dairy Science](#) and the [Journal of Animal Science](#).

The Food and Drug Administration has issued guidance to minimize the use of some antibiotics in livestock. The FDA's guidance aims to avoid exposing people's food to antibiotic-resistant bacteria, according to Nagaraja, a university distinguished professor of microbiology in the university's [College of Veterinary Medicine](#).

As the researchers started studying alternative treatments to antibiotic use, one of their team members, Eman Elkaweel, who was then a graduate student in animal science, suggested a substance that was new to the professors.

"She wanted to test some products that might have the potential to be used in her home country of Egypt, so we contacted a company that sold products containing essential oil components," said Titgemeyer, who is a professor and graduate program director in the animal sciences and industry department in the [College of Agriculture](#).

With funding from DSM Nutritional Products Inc., which supplies nutritional solutions for animal health, Nagaraja and Titgemeyer tested five essential oil components: eugenol, guaiacol, limonene, thymol and vanillin. They wanted to determine the compounds' ability to inhibit growth of *Fusobacterium necrophorum*. Limonene and thymol performed best. Follow-up testing between the two showed that limonene was slightly more effective than thymol and nearly as effective as tylosin, a commonly used antibiotic and feed additive used to hinder bacterial growth and the incidence of liver abscesses in cattle.

"While livestock producers often turn to antibiotics, our study shows that some essential oils also can inhibit microbial growth," Titgemeyer said. "Certain essential oil compounds can target specific bacterial populations and optimize animal health."