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Researchers find supplementary benefits in innovative probiotic study

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A study conducted by ALES researchers designed to increase fertility rates in dairy cows has yielded even greater results than researchers had originally hoped for.

Burim Ametaj and Michael Ganzle, along with their teams of researchers, set out to determine whether administering probiotics directly into the reproductive tract of dairy cows could help reduce the occurrence of a postpartum uterine infection known as metritis, which can result in infertility.

“Twenty-four per cent of all cows that are culled in Canada are due to infertility reasons, so it’s an enormous problem for the dairy industry,” said Ametaj. “If a cow doesn’t give birth to a calf every year, it won’t be able to produce milk.”

The research team led by Ganzle identified and isolated three lactic acid bacteria from the reproductive tract of healthy cows. As type and numbers of bacteria in the reproductive tract of cows are very different from those found in humans or other animals, the team could not build on prior knowledge of probiotic applications in humans and farm animals, Ganzle pointed out.

Forty cows were given an infusion of lactic acid bacteria and the remaining 40 served as a control group. The pregnancy rate in the test animals rose 25 per cent while incidences of metritis fell by more than 30 per cent.

Those results, however, proved to be only the tip of the iceberg.

In addition to reducing postpartum infections and increasing pregnancy rates, the test animals displayed higher milk production, fewer incidences of lameness and greater overall health than those in the control group.

Within a 50-day period of receiving the treatment with probiotics, milk production from the 40 test animals surpassed that of the control group by more than 10,000 litres. Milk quality was also improved as it contained greater amounts of lactose and protein and fewer somatic cells. The total percentage of cows culled due to diseases other than metritis fell from 17.5 to 4.9 per cent.

“The uterus is very important to a cow’s overall health,” Ametaj said. “Even diseases that would appear to have nothing to do with the reproductive system were affected. Laminitis, which affects the feet of the animal, was over 25 per cent lower in the cows who received the treatment.”

In addition to being economical, relatively simple to perform and highly effective in maintaining animal health, probiotics have no adverse effect on the animal’s milk, unlike traditional antibiotics used to treat infections.

“Production of antibiotics requires genetically modified organisms as well as ultraviolet radiation, x-ray radiation and chemicals to be produced,” said Ametaj. “With this procedure, we’re just taking bacteria from healthy cows and introducing them into other cows. No other resources are necessary.”

“It’s a very green technology,” he continued. “It’s beneficial to both the animals and the environment, which, in the end, is better for all of us.”

Provided by University of Alberta