

OHIO STATE UNIVERSITY EXTENSION



OHIO VETERINARY NEWSLETTER

October 3, 2014

Veterinary Extension

Vol 40, No 8

In This Issue

News

- [New Dairy Extension Veterinarian](#)

Research

- [Genetic relatedness and virulence factors of bovine *Staphylococcus aureus* isolated from teat skin and milk](#)
- [Evaluation of antibacterial activity of nitric oxide-releasing polymeric particles against *Staphylococcus aureus* and *Escherichia coli* from bovine mastitis](#)
- [Feeding practices of dog breeders in the United States and Canada](#)

Calendar

- [ODHMCP](#)
- [Organic Livestock and Poultry Health](#)

[Click here to view archives](#)

News

New Dairy Extension Veterinarian



Dr. Luciana da Costa has been hired as an additional Dairy Extension Veterinarian. She will complement Dr. Gustavo Schuenemann's current Extension program and focus on udder health and the improvement of milk quality relevant to conventional and organic production systems. She is originally from Brazil where she received her veterinary training and completed a residency and master's degree. In addition, she recently finished her PhD within the Department of Veterinary Preventive Medicine at Ohio State. Her research involved the epidemiology, genetic, and molecular characterization of *Staphylococcus aureus* in Ohio dairy farms. She previously served as a State Veterinarian in Brazil. Dr. da Costa can be reached at da-costa.2@osu.edu

Research

da Costa, L. B., Rajala-Schultz, P. J., Hoet, A., Seo, K.S., Fogy, K., & Moon, B. S. (2014). **Genetic relatedness and virulence factors of bovine *Staphylococcus aureus* isolated from teat skin and milk.** *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2014-7972

BACKGROUND: Results from the published literature regarding the role of teat skin as a source of *Staphylococcus aureus* intramammary infections are conflicting, and involvement of teat skin in *Staphylococcus aureus* epidemiology is not fully understood. Furthermore, a limited number of *Staphylococcus aureus* strains are typically detected within a herd with one predominant strain causing the majority of intramammary infections.

PURPOSE: The objective was to assess the association between teat skin colonization by *Staphylococcus aureus* and *Staphylococcus aureus* intramammary infections by (1) evaluating genotypic relatedness of *Staphylococcus aureus* isolates from milk and teat

Location

Department of Veterinary
Preventive Medicine

Chair: Dr. William Saville
A184 Sisson Hall
1920 Coffey Road
Columbus, Ohio 43210
saville.4@osu.edu
614-292-1206

Subscribe / Unsubscribe

Contact:
Jeffrey D. Workman, PhD
Extension Program Coord.
workman.45@osu.edu
614-292-9453

<http://vet.osu.edu/extension>

skin of dairy cows using pulsed-field gel electrophoresis, and (2) characterizing the isolates based on the carriage of virulence factors.

RESULTS: Colonization of teat skin with *Staphylococcus aureus* was significantly associated with *Staphylococcus aureus* intramammary infection as quarters colonized with this organism on teat skin had 4.5 times higher risk of being diagnosed with *Staphylococcus aureus* intramammary infections than quarters negative on teat skin. In addition, *Staphylococcus aureus* isolates from milk were closely related to those on teat skin as isolates from all 3 clusters were found both on teat skin and in milk from the infected mammary glands. A higher proportion of teat skin isolates compared with milk isolates carried some virulence factor genes, suggesting that the presence of these factors may provide some advantage to endure in an adverse environment.

CONCLUSIONS: The authors concluded that results demonstrated that some *Staphylococcus aureus* isolates from milk and teat skin were closely related. Additionally, quarters colonized by *Staphylococcus aureus* on teat skin were at a significantly higher risk of also having a *Staphylococcus aureus* intramammary infection compared with quarters negative on teat skin. The presence of particular virulence factors may have contributed to the ability of certain isolates to become the predominant strain and to get established in those herds. Further investigation relating strain characteristics and presence of combinations of virulence factors to severity of infection will be of clinical interest.

[ACCESS THE ARTICLE...](#)

Cardozo, V. F., Lancheros, C. A., Narciso, A. M., Valereto, E. C., Kobayashi, R. K., Seabra, A. B., & Nakazato, G. (2014). **Evaluation of antibacterial activity of nitric oxide-releasing polymeric particles against *Staphylococcus aureus* and *Escherichia coli* from bovine mastitis.** *International Journal of Pharmaceutics*, 473(1-2), 20-29. doi: 10.1016/j.ijpharm.2014.06.051

BACKGROUND: Emerging multidrug resistant bacteria that cause mastitis have complicated its management, and such resistance has complicated its prevention and treatment. Recent studies have indicated that nitric oxide is a key mediator for inflammatory responses caused by bovine mastitis.

PURPOSE: The objectives were to prepare and evaluate the antibacterial activity of nitric oxide-releasing polymeric particles against *Staphylococcus aureus* and *Escherichia coli*, which were isolated from bovine mastitis.

RESULTS: Nitric oxide-releasing polymeric particles inhibited *S. aureus* (subclinical mastitis) growth; however, this material was not efficient for *E. coli* (clinical mastitis). The minimum inhibitory concentration for S-nitroso-MSA-alginate/chitosan particles against *S. aureus* ranged from 125 mg/mL to 250 mg/mL.

CONCLUSIONS: The authors concluded that the results suggest that nitric oxide-releasing polymeric particles might be used to combat bacteria in treating and preventing bovine mastitis.

[ACCESS THE ARTICLE...](#)

Connolly, K. M., Heinze, C. R., & Freeman, L. M. (2014). **Feeding practices of dog breeders in the United States and Canada.** *Journal of the American Veterinary Medical Association*, 245(6), 669-676. doi: 10.2460/javma.245.6.669

BACKGROUND: A sound feeding strategy is considered essential for optimizing fertility, litter size, neonatal survival rate, and lactation in dogs. A better understanding of feeding practices of dog breeders will help veterinarians who wish to take a more proactive role in ensuring reproductive and overall health of dogs.

PURPOSE: The objective was to determine the proportion of dog breeders who fed diets that met the Association of American Feed Control Officials (AAFCO) nutritional adequacy standards for reproduction and growth and to investigate factors that influenced feeding practices of breeders.

RESULTS: Survey respondents reported feeding commercial diets not intended for the correct stage of life during gestation-lactation (16.9%) and puppy growth (8.7%). Approximately one-seventh of breeders reported feeding home-prepared diets during at least one life stage. Many breeders were influenced by unsubstantiated health and marketing information. Veterinarians were consulted for nutrition information by 49.3% of the breeders and were viewed less favorably by breeders feeding home-prepared diets compared to those feeding commercial diets.

CONCLUSIONS: The authors concluded that a concerning proportion of dog breeders surveyed in the present study fed their reproducing and growing dogs diets that did not meet AAFCO model regulations for nutritional adequacy of one or more life stages. Veterinarians, as a generally trusted source of nutrition information, should consider taking a more proactive role in directing dog breeders and their clients toward scientifically substantiated sources for nutrition information and in making specific nutritional recommendations for dogs of various life stages.

[ACCESS THE ARTICLE...](#)

Calendar



A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at <http://vet.osu.edu/>

[Ohio Dairy Health and Management Certificate Program](#)

Module 3 – Basic Dairy Cattle Nutrition
December 4-6, 2014

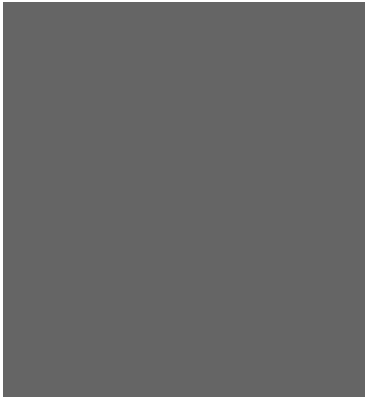
Module 4 – Advanced Dairy Cattle Nutrition
March, 2015 (TBD)

Modules 3 and 4 of this cohort will be focused on nutrition. Space is still available under the specific-module option.

[Organic Livestock and Poultry Health Series](#)

Webinar – Basics of Poultry Health and Management
Thursday, October 30, 2014 at 1:00 p.m.

Webinar – Internal Parasite Management in Pasture-Based Sheep and Goat Operations
Monday, November 3, 2014 at 1:00 p.m.



THE OHIO STATE UNIVERSITY

**COLLEGE OF VETERINARY MEDICINE
COLLEGE OF FOOD, AGRICULTURAL
AND ENVIRONMENTAL SCIENCES**