

OHIO STATE UNIVERSITY EXTENSION



OHIO VETERINARY NEWSLETTER

July 2, 2015

Veterinary Extension

Vol 41, No 14

In This Issue

News

- [HPAI Update](#)
- [Michigan confirms first case of CWD in free-ranging white-tailed deer](#)

Research

- [Effects of disinfection on the molecular detection of porcine epidemic diarrhea virus](#)
- [Supplementing fresh bovine colostrum with gut-active carbohydrates reduces passive transfer of immunoglobulin G in Holstein dairy calves](#)
- [Cost-benefit analysis of vaccination against *Mycobacterium avium* ssp. *paratuberculosis* in dairy cattle, given its cross-reactivity with tuberculosis tests](#)

Calendar

- [ODHMCP](#)
- [Organic Livestock & Poultry Health Series](#)

News

Update – Highly Pathogenic Avian Influenza

The two hardest-hit states, Iowa and Minnesota, have now gone 2 weeks and almost 4 weeks, respectively, without any new poultry outbreaks. Officials expected that the situation would improve in the summer, when the weather is less favorable for the virus, but they also have warned that outbreaks could return in the fall.

[ACCESS THE ARTICLE...](#)

Michigan confirms first case of CWD in free-ranging white-tailed deer

A free-ranging deer has been confirmed to be positive for chronic wasting disease (CWD) in Ingham County, Michigan (county located in central Michigan and includes much of Lansing). This is the first time the disease has been found in Michigan's wild deer population.

[ACCESS THE ARTICLE...](#)

Research

Bowman, A. S., Nolting, J. M., Nelson, S. W., Bliss, N., Stull, J. W., Wang, Q., & Premanandan, C. (2015). **Effects of disinfection on the molecular detection of porcine epidemic diarrhea virus.** *Veterinary Microbiology*. Advance online publication. doi: 10.1016/j.vetmic.2015.05.027

BACKGROUND: Disinfection of trucks and trailers is currently one of the primary methods used to control spread of porcine epidemic virus (PEDV), but excessive cleaning and disinfection necessary to achieve negative test results is very expensive for pork producers. PEDV is difficult to culture outside of an animal model; thus, RT-PCR assays are currently the only test available to producers and veterinarians to ensure that equipment is free of PEDV. However, RT-PCR cannot distinguish between viable and inactivated virus; thus, positive results are common even if the trailer has been effectively disinfected. Data from other pathogens indicate that some disinfectants (e.g., accelerated peroxide-based compounds and/or sodium hypochlorite) would better disrupt the viral

[Click here to view archives](#)

Location

[Department of Veterinary Preventive Medicine](#)

Interim Chair:
Dr. Thomas E. Wittum
A100S Sisson Hall
1920 Coffey Road
Columbus, Ohio 43210
wittum.1@osu.edu
614-292-1206

Subscribe

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

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

RNA and produce more meaningful RT-PCR results.

PURPOSE: To examine the effect of disinfectants on RT-PCR results for PEDV and explore practical solutions to produce RT-PCR negative trailers after they have been contaminated with PEDV. In the laboratory, they evaluated the capability of five classes of disinfectants (phenol, quaternary ammonium compound, sodium hypochlorite, oxidizing agent, and quaternary ammonium/glutaraldehyde combination) to both inactivate PEDV and sufficiently damage viral RNA beyond RT-PCR detection. Furthermore, to simulate field conditions, PEDV was also applied to pitted aluminum.

RESULTS: No infectious PEDV was recovered after treatment with evaluated disinfectants. Additionally, all tested disinfectants except for 0.17% sodium hypochlorite dramatically reduced qRT-PCR values. However, no disinfectants eliminated RT-PCR detection of PEDV across all replicates; although, 0.52%, 1.03%, and 2.06% solutions of sodium hypochlorite and 0.5% oxidizing agent did intermittently produce RT-PCR negatives. Post-treatment surface swabs of the aluminum tested RT-PCR positive, but were not infectious to cultured cells or naïve pigs.

CONCLUSIONS: The authors concluded that all tested disinfectants inactivated PEDV but few prevented RT-PCR detection of viral RNA. RT-PCR detection of PEDV is likely even after disinfection with many commercially available disinfectants. Pork producers attempting to disinfect transportation equipment should take steps whenever possible to properly clean the equipment prior to disinfectant application, increase the ambient temperature of the equipment, and use an appropriate disinfectant according to labeled directions.

[ACCESS THE ARTICLE...](#)

Brady, M. P., Godden, S. M., & Haines, D. M. (2015). **Supplementing fresh bovine colostrum with gut-active carbohydrates reduces passive transfer of immunoglobulin G in Holstein dairy calves.** *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2015-9481

BACKGROUND: Colostrum is a critical source of nutrients and immune factors for newborn calves, but it can also represent one of the earliest potential exposures of dairy calves to several infectious agents including *Mycoplasma* spp., *Mycobacterium paratuberculosis*, fecal coliforms, *Salmonella* spp., and bovine leukemia virus. Mannan-oligosaccharide is a gut-active carbohydrate derived from the cell wall of yeast which has been shown to adsorb pathogens, reducing their ability to colonize the gastrointestinal tract. Further study of the relationship between gut-active carbohydrate supplementation of colostrum and IgG absorption is needed because of conflicting results in previous research.

PURPOSE: The objective was to investigate the effect of supplementing maternal colostrum with gut-active carbohydrate on the absorption of IgG in neonatal dairy calves.

RESULTS: Colostrum and calf characteristics, including colostrum IgG concentration (g/L), colostrum bacteria counts (log₁₀, cfu/mL), calf dystocia scores (1 to 4), birth weights (kg), and age at first feeding (min) were not different between the group fed gut-active carbohydrate (n = 47) and the control group (n = 48). Mixed linear regression analysis showed that calves fed colostrum supplemented with 30 g of gut-active carbohydrate had lower mean (standard error) apparent efficiency of absorption of IgG and lower serum IgG concentrations at 24 h [23.9% (1.0); IgG = 24.0 (1.1) g/L] than did control calves [30.4% (1.0); IgG = 30.8 (1.0) g/L].

CONCLUSIONS: The addition of 30 g of gut-active carbohydrate to 3.8 L of bovine colostrums resulted in a reduction in absorption of IgG (AEA %) and lower final serum IgG concentrations in newborn Holstein calves compared with control calves fed colostrum not supplemented with gut-active carbohydrate. Until the scientific community acquires a better understanding of the relationship between gut-active carbohydrate and passive transfer of immunoglobulins, it is not recommended that colostrums be supplemented with

gut-active carbohydrate.

[ACCESS THE ARTICLE...](#)

Groenendaal, H., Zagmutt, F. J., Patton, E. A., & Wells, S. J. (2015). **Cost-benefit analysis of vaccination against *Mycobacterium avium* ssp. *paratuberculosis* in dairy cattle, given its cross-reactivity with tuberculosis tests.** *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2014-8914

BACKGROUND: Current strategies and management practices to control and prevent Johne's disease caused by *Mycobacterium avium* ssp. *paratuberculosis* (MAP) takes considerable resources and long-term efforts before seeing a benefit; thus, adoption has been limited. Vaccination for MAP is a promising alternative, but the problem is that it can interfere with the diagnosis of bovine tuberculosis and the eradication and surveillance program. No known empirical study has simultaneously considered the economics of MAP vaccination and its economic consequences on the bovine tuberculosis surveillance and eradication program.

PURPOSE: The objective was 2-fold. First, the study used a previously developed empirically based simulation model of MAP vaccination on dairy herds to estimate the direct farm-economic consequences of MAP vaccination. Second, the study compared these direct farm-economic effects of MAP vaccination with its indirect economic effect on the bovine tuberculosis surveillance program.

RESULTS: Direct economic benefits of MAP vaccination were estimated at \$8.03 (90% predictive interval: -\$25.97 to \$41.36) per adult animal per year, all accruing to the dairy producers. This estimate is likely an underestimation of the true direct benefits of MAP vaccination. In addition, indirect economic costs due to cross-reactivity were \$2.14 per adult animal per year, making MAP vaccination economically attractive. Only in regions or states with a high frequency of bovine tuberculosis testing (because of, for example, *Mycobacterium bovis* outbreaks in a wild deer population) and areas where typically small groups of animals are bovine tuberculosis tested would MAP vaccination not be economically attractive.

CONCLUSIONS: The authors concluded that an important consideration with their findings is that all net direct benefits are incurred by producers, whereas the indirect costs are mostly paid for by the government or taxpayer. Overall, the study indicated that vaccination against Johne's disease is an economically attractive tool on MAP-infected dairy herds in regions with limited caudal-fold tuberculin testing. Vaccination for MAP would become even more economically attractive if MAP vaccines or bovine tuberculosis serological tests that minimize cross-reactivity were to become available.

[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 6 – Economics of Dairy Business
Dec 3-4, 2015
Hilton Garden Inn, Columbus, Ohio
Spots are always available for specific module plan.

Organic Livestock and Poultry Health Series

This series provides veterinary CE at no-cost.

Upcoming webinars:

Managing and Monitoring Hypocalcemia in Dairy Cows
July 6, 2015 (12-1 p.m.)

Basics of Poultry Health Management
July 27, 2015 (12-1 p.m.)

Improving Milk Quality
August 3, 2015 (12-1 p.m.)

Defining and Monitoring Health Events in Dairy Herds
September 7, 2015 (12-1 p.m.)

Certified Organic Livestock Standards
October 8, 2015 (1-2 p.m.)

Organic Livestock Inputs
October 22, 2015 (1-2 p.m.)

Nutritional Management of Lactating Dairy Cows
November 9, 2015 (12-1 p.m.)

Information presented above and where trade names are used, they are supplied with the understanding that no discrimination is intended and no endorsement by Ohio State University Extension is implied.

Ohio State University Extension embraces human diversity and is committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA.

Keith L. Smith, Associate Vice President for Agricultural Administration; Associate Dean, College of Food, Agricultural, and Environmental Sciences; Director, Ohio State University Extension and Gist Chair in Extension Education and Leadership.

Access to full-text journal articles may require individual subscriptions.



THE OHIO STATE UNIVERSITY

COLLEGE OF VETERINARY MEDICINE



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