

INTERPRETIVE SUMMARIES, MAY 2017

Invited review: Determinants of farmers' adoption of management-based strategies for infectious disease prevention and control. *By Ritter et al., page 3329.* Farmers often do not adopt recommended management practices to reduce transmission of pathogens (on and between farms). Besides financial considerations, management implementation is influenced by farmers' knowledge, their perception of responsibility for an existing problem, and their confidence that proposed management recommendations are effective, feasible and yield more advantages than disadvantages. Although veterinary practitioners are often the most important information source regarding animal health, farmers use a variety of extension conduits. This review examines the body of literature about influences on farmers' management adoption and synthesizes that literature to make recommendations to more effectively motivate implementation of best practices.
<https://doi.org/10.3168/jds.2016-11977>.

Invited review: Anti-adhesive properties of bovine oligosaccharides and bovine milk fat globule membrane-associated glycoconjugates against bacterial food enteropathogens. *By Douëllou et al., page 3348.* Foodborne diseases due to intestinal pathogenic bacteria are a public health concern and cause economic losses due to food spoilage and outbreaks. The diseases develop first by the adhesion of the pathogenic agent to the digestive tract. Interestingly, components of the milk fat globule membrane (MFGM) limit adhesion to the intestinal tract of several pathogenic bacteria responsible for foodborne disease. This review describes the adhesion strategies of several pathogenic bacteria to intestinal tract, the anti-adhesive properties of MFGM against them, and addresses the potential use of MFGM derivative products in the dairy industry.
<https://doi.org/10.3168/jds.2016-11611>.

Identification and quantification of 12 pharmaceuticals in water collected from milking parlors: Food safety implications. *By Veiga-Gómez et al., page 3373.* The introduction of drug residues into the food chain and into drinking water has recently been investigated. The aim of this research was to monitor the presence of 19 active drugs in water samples collected from milking parlors of dairy farms located in Galicia (northwest Spain). A total of 12 drugs were measured, with concentrations ranging from 17 to 3,941 ng/L. Considering that a mixture of compounds may contribute to the overall effect of each compound and might increase or reduce toxicity, 29% of the samples contained more than one pharmaceutical.
<https://doi.org/10.3168/jds.2016-12227>.

Characterization of major and trace minerals, fatty acid composition, and cholesterol content of Protected Designation of Origin cheeses. *By Manuelian et al., page 3384.* This study aimed to characterize mineral, fatty acid, and cholesterol contents of several Protected Designation of Origin (PDO) cheeses. The knowledge of these components is relevant for human nutrition and would help consumers in making purchase decisions. Mineral, fatty acids, and cholesterol contents varied across cheese types according to moisture content and with species. Our results provide a full characterization of commercial PDO cheeses.
<https://doi.org/10.3168/jds.2016-12059>.

Evaluation of tilapia skin gelatin as a mammalian gelatin replacer in acid milk gels and low-fat stirred yogurt. *By Pang et al., page 3436.* Mammalian gelatin is considered the best stabilizer in low-fat yogurt, but it is not accepted by consumers with certain religious beliefs. We evaluated the potential of tilapia skin gelatin (TSG) as a replacement for mammalian gelatin in yogurt. We observed lower gelling and melting temperatures for TSG than for bovine gelatin, similar effects on the physical properties of acid milk gels, and no difference in sensory properties between TSG and bovine gelatin-containing yogurts. Therefore, TSG could effectively replace mammalian gelatin in yogurt.
<https://doi.org/10.3168/jds.2016-11881>.

Mutual growth-promoting effect between *Bifidobacterium bifidum* WBB103 and *Listeria monocytogenes* CMCC 54001. *By Yang et al., page 3448.* We investigated the interaction between *Bifidobacterium bifidum* WBB103 and *Listeria monocytogenes* CMCC 54001 and we detected changes in their growth pattern and proteomic changes after mutual interaction. The results suggested that growing the two organisms together could promote the growth of each other, facilitating earlier entry into the logarithmic phase.
<https://doi.org/10.3168/jds.2016-11804>.

Prevalence, antimicrobial resistance, and molecular characterization of *Campylobacter* spp. in bulk tank milk and milk filters from US dairies. *By Del Collo et al., page 3470.* *Campylobacter* is a common cause of foodborne outbreaks associated with unpasteurized milk. *Campylobacter* has been detected on most dairy farms in the United States and frequently in bulk tank milk (BTM). This study determined the prevalence of thermophilic *Campylobacter* in BTM on US dairy farms. *Campylobacter* was detected in either the BTM or milk filters from 24.9% of US dairy op-

erations. *Campylobacter jejuni* was the most frequently isolated species. This survey suggests that BTM from US dairies can be contaminated with pathogenic *Campylobacter*, and the consumption of unpasteurized milk represents a potential risk to human health.
<https://doi.org/10.3168/jds.2016-12084>.

Salmonella detection in powdered dairy products using a novel molecular tool. By Zhao et al., page 3480. In this study, we established a method of loop-mediated isothermal amplification (LAMP) combined with lateral flow dipstick targeting the *siiA* gene for detection of *Salmonella* in powdered infant formula. We used propidium monoazide to reduce LAMP contamination. Results indicate that this innovative approach will provide a rapid, accurate, sensitive, and convenient detection system for *Salmonella* in powdered infant formula and likely a number of additional dairy products.
<https://doi.org/10.3168/jds.2016-12535>.

Reduction of *Mycobacterium avium* ssp. paratuberculosis in colostrum: Development and validation of 2 methods, one based on curdling and one based on centrifugation. By Verheghe et al., page 3497. *Mycobacterium avium* ssp. *paratuberculosis* (MAP) causes a chronic and often lethal enteritis in cows, resulting in reduced milk yields and negative economic consequences. In this project, we aimed to reduce MAP in colostrum using curdling (for on-farm treatment) and centrifugation (for off-farm treatment, semi-industrial). The on-farm protocol resulted in 1 log reduction of MAP per mL of colostrum, whereas the semi-industrial protocol resulted in a 1.5 log reduction. The animal experiment revealed no significant differences between the test groups and the control groups (n=24, 4 test groups; health parameters, immunoglobulin G blood value, and consumability).
<https://doi.org/10.3168/jds.2016-12355>.

Thermal conductivity as influenced by the temperature and apparent viscosity of dairy products. By Gonçalves et al., page 3513. The study reports the experimental values of thermal conductivity and features the apparent viscosities of several dairy products. In addition, we developed equations to evaluate the relationship between these properties and the influence of temperature over the range of 5 to 25°C. The knowledge of these properties is necessary for the development and design of equipment and procedures to allow better optimization of the techniques used for good quality control of the final product and better understanding of the structural organization of the food. Furthermore, they are important for future engineering calculations involving heat and mass transfer.
<https://doi.org/10.3168/jds.2016-12051>.

Prediction and repeatability of milk coagulation properties and curd-firming modeling parameters of ovine milk using Fourier-transform infrared spectroscopy and Bayesian models. By Ferragina et al., page 3526. Coagulation properties of sheep milk are important for cheese production. It is difficult to routinely measure milk coagulation properties (MCP) on a large scale because of costs and time-consuming laboratory methods. Predictions of MCP by Fourier-transform infrared spectroscopy (FTIR) might be an alternative to direct measures of MCP. This study, carried out on a large sample of Sarda ewes, a dairy breed from Sardinia (Italy), showed that FTIR applied at the individual level is an efficient method for predicting MCP and could be used as an indirect tool for the improvement of MCP applied at the population level.
<https://doi.org/10.3168/jds.2016-12226>.

Replacing alfalfa silage with tannin-containing birdsfoot trefoil silage in total mixed rations for lactating dairy cows. By Broderick et al., page 3548. Silages made from alfalfa or birdsfoot trefoil were fed to dairy cows in 2 trials. Milk and milk component yields were maximized on diets formulated with birdsfoot trefoil containing approximately 0.5% tannin, and all trefoil diets reduced urinary nitrogen compared with alfalfa diets. Previously we found that feeding birdsfoot trefoil silage containing 1.6% tannin in place of alfalfa silage resulted in greater improvement in milk and milk component yields but smaller reduction in urinary nitrogen. Thus, additional work is needed to identify optimum tannin levels and management practices to maximize milk production responses to diets formulated with tannin-containing forages.
<https://doi.org/10.3168/jds.2016-12073>.

Enteric methane production in lactating dairy cows with continuous feeding of essential oils or rotational feeding of essential oils and lauric acid. By Klop et al., page 3563. The rumen microbial ecosystem can adapt to feed additives that lower CH₄ production, which may cause the decrease in CH₄ to be a transient response. The alternating use of 2 or more CH₄-mitigating feed additives with different modes of action may alleviate microbial adaptation. In the present study, we compared CH₄ production and performance of dairy cows fed either a blend of essential oils only or essential oils and lauric acid using a weekly rotation schedule. Results showed a nonpersistent decrease in CH₄ production expressed per unit of feed or per unit of milk upon feeding a rotation of essential oils and C12:0 in lactating dairy cows.
<https://doi.org/10.3168/jds.2016-12033>.

Effects of feeding hull-less barley on production performance, milk fatty acid composition, and nutrient digestibility of lactating dairy cows. By

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