

INTERPRETIVE SUMMARIES, NOVEMBER 2016

Effect of dried nut fortification on functional, physicochemical, textural, and microbiological properties of yogurt. *By Ozturkoglu-Budak et al., page 8511.* Walnut, hazelnut, almond, or pistachio were added into yogurt to produce a functional product with a rich content of folic acid, selenium, tocopherols, or omega fatty acids, depending on the nut type added. These products are targeted to reach to consumers not only because of their nutritional properties but also their organoleptic desirability. Although the addition of nuts increases the cost of yogurt by 42 to 86%, such products would be preferred due to their high nutritional benefits.
<http://dx.doi.org/10.3168/jds.2016-11217>.

Good sensory quality and cheesemaking properties in milk from Holstein cows managed for an 18-month calving interval. *By Maciel et al., page 8524.* We examined the milk produced by cows managed to achieve an extended lactation. The results showed that protein and casein concentrations increased toward the end of the extended lactation period, improving the characteristics and yield of milk curds. Off-flavors were not noticed in milk at the end of the extended lactation period compared with mid-lactation milk. Moreover, udder health was not compromised when the lactation was extended. Prolonging the lactation length of healthy cows did not affect quality or suitability of milk for cheese manufacturing.
<http://dx.doi.org/10.3168/jds.2016-10958>.

Influence of hydrodynamic cavitation on the rheological properties and microstructure of formulated Greek-style yogurts. *By Meletharayil et al., page 8537.* The present study explored hydrodynamic cavitation as a post-fermentative tool in the manufacture of formulated Greek-style yogurts. The shear forces produced by hydrodynamic cavitation helped address textural defects such as increased viscosity and high adhesiveness—defects that are commonly perceived by consumers of formulated Greek-style yogurts. Additionally, the use of carbon dioxide-treated milk protein concentrate as a protein source helped reduce the acidity of Greek-style yogurts. This process could further help address the vexing problem of acid whey disposal while maintaining the sensory and textural attributes associated with strained Greek yogurts.
<http://dx.doi.org/10.3168/jds.2015-10774>.

Prediction of fat globule particle size in homogenized milk using Fourier transform mid-infrared spectra. *By Di Marzo et al., page 8549.* Milk fat globule particle size in homogenized milk was predicted directly from a mid-infrared (MIR) spectra of milk using

partial least squares statistical modeling. The accuracy of the prediction models may provide an alternative for routine quality assurance to monitor the daily average of the particle size performance and determine if the homogenizer within a MIR milk analyzer is near the failure level and needs to be replaced. This will help maintain repeatable and accurate milk testing.
<http://dx.doi.org/10.3168/jds.2016-11284>.

Prediction of fatty acid chain length and unsaturation of milk fat by mid-infrared milk analysis. *By Wojciechowski and Barbano, page 8561.* Milk fatty acid chain length (carbons/fatty acid) and fatty acid unsaturation (double bonds/fatty acid) were predicted directly from mid-infrared spectra of milk using partial least squares modeling. These chain length and unsaturation values were used in real time to improve the accuracy of milk fat prediction by mid-infrared milk analysis.
<http://dx.doi.org/10.3168/jds.2016-11248>.

Short communication: Influence of preserving factors on detection of β -lactamase in raw bovine milk. *By Zhang et al., page 8571.* Sample quality is critical when analyzing β -lactamase in bovine milk. Our objective was to validate effects of sample preservation temperature and time and usage of preservatives on the stability of β -lactamase in raw milk samples. We demonstrated that refrigeration (for 4, 8, 24, or 48 d), freezing (for 1, 7, or 30 h), thawing (at 25, 40, or 60°C), and use of the preservatives sodium thiocyanate, bronopol, and methanol had no influence on β -lactamase detection, whereas use of the preservatives sodium azide and potassium dichromate could affect β -lactamase detection in raw milk when the cylinder plate method was used.
<http://dx.doi.org/10.3168/jds.2016-11096>.

Effect of high-pressure processing of bovine colostrum on immunoglobulin G concentration, pathogens, viscosity, and transfer of passive immunity to calves. *By Foster et al., page 8575.* High-pressure processing (HPP) is a potential alternative to thermal processing of bovine colostrum. In bovine colostrum, HPP significantly reduced total aerobic bacteria, *Escherichia coli*, *Salmonella* Dublin, and viral pathogens, but not *Mycobacterium avium* ssp. *paratuberculosis*. Viscosity increased and immunoglobulin G content decreased after HPP, but both remained adequate for calf feeding. A decrease in efficiency of absorption was observed in calves fed HPP versus heat-treated colostrum, but rates of adequate transfer of passive immunity were not different. High-pressure

processing may be a feasible alternative to thermal processing of bovine colostrum for dairy calves.
<http://dx.doi.org/10.3168/jds.2016-11204>.

Virulence profile and genetic variability of *Staphylococcus aureus* isolated from artisanal cheese. By Ferreira et al., page 8589. Minas frescal cheese is a very popular food in Brazil and can be hand-made (from raw milk) or industrialized (from pasteurized milk). Contamination with pathogenic microorganisms such as *Staphylococcus aureus* is very common. This bacterium when present in food may produce enterotoxins, which cause food poisoning. Therefore, the aim of this study was to evaluate the contamination by *Staphylococcus aureus* in artisanal and industrialized Minas frescal cheese, and to detect genes that encode virulence factors.
<http://dx.doi.org/10.3168/jds.2015-10732>.

Anti-listeria effects of chitosan-coated nisin-silica liposome on Cheddar cheese. By Lin et al., page 8598. As a substitute of commercial nonedible coating, antimicrobial edible coating creates a new vehicle for food preservation. Cheese is easily contaminated by *Listeria monocytogenes* during processing and storage. In order to inhibit this bacteria growth, we engineered a chitosan-coated nisin-silica liposome in the present study. The liposomes showed sustained antimicrobial activity against *Listeria monocytogenes* on Cheddar cheese during storage at 4°C and 25°C without affecting sensory quality.
<http://dx.doi.org/10.3168/jds.2016-11658>.

Short communication: In vivo screening platform for bacteriocins using *Caenorhabditis elegans* to control mastitis-causing pathogens. By Son et al., page 8614. *Caenorhabditis elegans* is accepted as a convenient animal model for studying host–bacteria interactions in potential host animals. In this study, we developed a direct in vivo screening platform using *C. elegans* to screen active bacteriocins that inhibit a mastitis-causing pathogen. Using our liquid *C. elegans*–*Staphylococcus aureus* assay, we showed that a novel bacteriocin produced by *Bacillus licheniformis* strain 146 exhibited antimicrobial activity for targeting mastitis-causing pathogen. Our direct in vivo screening platform facilitates simple, rapid, and cost-effective screening of potential antimicrobial compounds to prevent diseases in dairy cows, including mastitis.
<http://dx.doi.org/10.3168/jds.2016-11330>.

Short communication: Heat-resistant *Escherichia coli* as potential persistent reservoir of extended-spectrum β -lactamases and Shiga toxin-encoding phages in dairy. By Marti et al., page 8622. Heat-resistant *Escherichia coli* isolates were isolated from raw milk and raw milk cheeses. They were

amenable to horizontal gene transfer of both antimicrobial resistance plasmids and Shiga toxin-encoding phage 933W, and may thus act as a persistent reservoir of resistance and virulence factors.
<http://dx.doi.org/10.3168/jds.2016-11076>.

Short communication: Change of naturally occurring benzoic acid during skim milk fermentation by commercial cheese starters. By Han et al., page 8633. This study was conducted to investigate the change of naturally occurring benzoic acid (BA) during fermentation by cheese starters. The BA content during fermentation by STB-01 was detected after 12 h at all temperatures. In LC431, BA increased at 35°C up to 11.13 mg/kg. In case of R707, BA increased from 6 to 15 h and decreased after 15 h at 40°C. Contents of BA during STB-01 and CHN11 (1:1) fermentation were detected after 3 h at 35°C and 40°C and after 6 h, increasing up to 9 h at 30°C. The highest amount of BA was found when R707 was used among other starters.
<http://dx.doi.org/10.3168/jds.2016-10890>.

Short communication: Pasteurization as a means of inactivating of staphylococcal enterotoxins A, B, and C in milk. By Necidova et al., page 8638. Our study aim was to assess the effect of pasteurization temperature on inactivation of staphylococcal enterotoxins (SE). Milk samples were inoculated with *Staphylococcus aureus* (40 different strains) and incubated at 37°C for 24 h to develop SE. A linked immunofluorescent assay (ELFA) method was used to detect SE, which were determined semi-quantitatively. After pasteurization (for 15 s) at 72°C, SE were detected in 87.5% of samples (35/40), after pasteurization at 85°C in 52.5% of samples (21/40), and after pasteurization at 92°C in 45.0% of samples (18/40).
<http://dx.doi.org/10.3168/jds.2016-11252>.

Separation of milk fat globules via microfiltration: Effect of diafiltration media and opportunities for stream valorization. By Jukkola et al., page 8644. The study describes an efficient separation of milk fat from whole milk by microfiltration. Such separation leads to an increased potential for the recovery of milk fat. Milk fat globule membranes have a high nutritional value and functional properties. We highlight an improved industrial process for separation of these specific milk fat components.
<http://dx.doi.org/10.3168/jds.2016-11422>.

Effect of transmembrane pressure control on energy efficiency during skim milk concentration by ultrafiltration at 10 and 50°C. By Méthot-Hains et al., page 8655. Skim milk was ultrafiltered using a polyethersulfone spiral-wound membrane of 10,000 Da operating at constant transmembrane pressure (672 or 465 kPa) and dynamic transmembrane pressure (276 to

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