**ADSA-SAD Dairy Foods Oral Competition**

**1 The surprising benefits of camel milk.** G. M. DeMers* and D. R. Olver, Pennsylvania State University, University Park, PA.

With an ever-growing list of alternatives to traditional cow milk being offered in grocery stores everywhere, there is a new contender in this evolving market: camel milk. In fact, a leading food and beverage website declared camel milk to be one of the top 5 trends shaping the international dairy industry in 2019. With a flavor profile more similar to cow milk than many other choices (such as plant-based alternatives), camel milk contains many of the essential nutrients associated with cow milk while retaining the true “milk” title. Two species of camels, Dromedary and Bactrian, produce milk that offers additional nutritional benefits attractive to some segments of consumers. Studies of people consuming camel milk have demonstrated lower instances of lactose intolerance reactions, lower blood sugar levels with improved insulin sensitivity, and increased immune support. According to the Food and Agricultural Organization of the United Nations, typical camel milk contains 3.1% protein and 3.5% fat. However, there is considerable variation in composition data for some constituents. High levels of camel milk components such as lactoferrin contribute to its antibacterial and antifungal properties. In addition to these benefits, camels are very efficient animals that can produce more milk from poorer quality feedstuffs compared with other species. One disadvantage of camel milk is that traditional dairy products such as butter and cheese are more difficult to manufacture, leading to a mainly fluid-based market. Camel milk is primarily produced in Africa and Asia, with Somalia being the largest producer of camel milk worldwide. In the United States, several Amish and Mennonite farms have begun marketing camel-based dairy products. As the availability of camel milk continues to grow, it has the opportunity to become a growing contender in the dairy aisle.

**Key Words:** camel milk, diabetes, immunity

**2 Evaluating the impact of novel products to the dairy market on fluid milk utilization.** A. Crews* and J. Bohlen, University of Georgia, Athens, GA.

In the last decade, the consumption of fluid milk has continued to drop in the United States as consumer preference for milk substitutes continues to rise. With increasing health concerns and diet trends, remaining consumers of fluid milk are pressuring for innovation in the market of dairy food production. Gallon jugs of milk are less desirable with smaller families and a short shelf stability limit its demand, especially when habitual breakfast is becoming less popular and the market for its complimentary good, cereal, is declining. It begs the question as to why fluid milk remains so highly regarded by cooperatives in regions such as the Southeast. Simply put, the mechanics and labor processing facilities value at too large of an expense to give reason to push for investment in an area such as the Southeastern United States with such an unsteady seasonal milk supply. Across the US but especially for producers in the southeastern United States, the need for increased fluid milk utilization is called for. This need for price increase and stabilization for dairy producers coupled with consumer driven markets ultimately calls for the reinvention of standard fluid milk. Novel products changing fluid milk utilization have focused on its inclusion in other products, refinement of the milk product, and more attractive packaging. These products include items such as milk-based coffee products to target a widely consumed product, A2 milk, and milk presented in glass bottles. Ultimately, the fluid milk industry will need to diversify its product offering and methodologies of presentation to remain profitable, and refinement and packaging offer opportunities for stabilization of dairy prices.

**Key Words:** fluid milk, market innovation, utilization

**3 Effects of pasteurization method on milk composition.** L. M. Adams*, G. Mazon, and J. H. C. Costa, University of Kentucky, Lexington, KY.

From 1998 to 2003, 75% of disease outbreaks related to milk consumption occurred in states where raw milk sales are permitted (Lucey, 2015). However, illnesses associated with milk consumption totaling less than 1% of foodborne illnesses because of the pasteurization process (FDA, 2011). The main goal of pasteurization is to decrease pathogens such as Salmonella, Campylobacter, and E. coli in raw milk to a level safe for consumption (Oliver et al., 2005). There are 3 main pasteurization methods: low-temperature long time (63°C for 30 min), high-temperature short time (HTST; 72°C for 15 s), and ultra-high temperature (UHT; 135 to 150°C for 1 to 2 s). According to the International Dairy Foods Association, HTST pasteurization is the most common method used in the United States but yields milk with a lower shelf life than UHT (Bezie et al., 2019). Although UHT pasteurization extends milk shelf life, it also affects milk protein and lipid composition. In the UHT process, the extreme heat exposure denatures proteins at the tertiary and secondary structure level of whey proteins (Qi et al., 2015). Complete proteolysis occurs in the native milk plasmin and bacterial proteinases of UHT processed milk (Datta and Deeth, 2003). Moreover, the process of proteolysis can result in gelatinization of milk leaving a residue and a slight change in flavor when comparing UHT to HTST milk (Meunier-Goddik, 2016). Regarding lipids, research indicates that triglyceride levels are significantly lower in UHT compared with HTST and free fatty acid concentrations increased indicating lipolysis in UHT milk (Xu et al., 2019). Research suggests that those slight changes to milk composition might affect the acceptance of UHT milk by consumers as evidenced by a sensory panel in which HTST milk was liked slightly more than UHT (Chapman and Boor, 2001). In summary, consumer’s preferences should be considered when selecting a pasteurization method for milk as it can affect the protein and lipid structure in milk consequently affecting and taste perception.

**Key Words:** food safety, pathogen, sensory analysis