

## ADSA-SAD (Student Affiliate Division) Undergraduate Competition: Dairy Foods

**110 Conjugated linoleic acids and their effect on dairy marketing.** R. M. Haines\*, B. A. Corl, and D. R. Winston, *Virginia Polytechnic Institute and State University, Blacksburg.*

Conjugated linoleic acids (CLA) are 18 carbon fatty acids with two conjugated double bonds. Several CLA isomers exist in ruminant food products; the placement and type of double bonds help determine the chemical properties and health benefits associated with that isomer. Of these CLA isomers, *cis-9, trans-11* is most important, exhibiting cancer fighting properties when found in high enough tissue concentrations. Specifically *cis-9, trans-11* prevents and reduces the incidence of malignant mammary tumors in both rodents and more recently in human studies. Milk products are the leading source of *cis-9, trans-11* CLA in the diet as this isomer comprises 90% of the CLA in milk fat. While supplements are available to supply higher levels of CLA in the body, dairy products are a better source of the compound. Specifically, consumption of milk products produces higher *cis-9, trans-11* tissue concentrations than chemically prepared supplements because dairy products contain vaccenic acid, a precursor to the *cis-9, trans-11* isomer. Vaccenic acid can be used to synthesize CLA in body tissues as demonstrated in cows, rodents, swine and humans. Dairy products also produce higher tissue concentrations of *cis-9, trans-11* because this isomer is in higher concentrations in milk fat than in supplements. While *cis-9, trans-11* comprises 90% of CLA in milk fat; the average supplement is only 44.81% *cis-9, trans-11* isomers. The *trans-10, cis-12* isomer is found in commercial supplements in roughly equal quantities to *cis-9, trans-11* CLA. *Trans-10, cis-12* has been linked to hyperinsulinemia and insulin resistance in rodents which makes future research necessary to investigate the safety of this isomer. Additionally, high-CLA milk products are acceptable to consumers, with taste panels identifying no significant difference in color, taste, or overall quality when compared to traditional milk. Because of this lack of sensory difference and health benefits associated with consumption of high-CLA dairy products, consumers expressed a willingness to pay generous price premiums for high-CLA milk products that could provide opportunities to expand milk marketing and increase revenue for the dairy industry.

**Key Words:** Conjugated Linoleic Acid

**111 Probiotics: For life.** S. Quarles\*, *Clemson University, Clemson, SC.*

Dairy product consumption transforms with the landscape of the U.S. population. Consumer standards, wants, and needs are ever changing. Recent commercialization identifies a growing consumer demand; probiotics. Easy enough for the manufacturers, as these microscopic flora have been part of the dairy industry for centuries. What has caused this new attraction to these beneficial products? Knowledge. With all the information available it is easy to see why these products are a good investment; given society is growing more health conscious. According to a conference held by the National Center for Complimentary and Alternative Medicine (NCCAM), specific aims for probiotics include treatment of intestinal irregularities and the prevention of certain infections of the female reproductive tract, cancer recurrence, and atopic dermatitis in children. Microorganisms are naturally found in the human gut and most are beneficial for the digestive process; however, some may have detrimental effects on the human system. Diarrhea is a common

ailment caused by viral or bacterial infections and can be exacerbated by the use of antibiotics. Research has found the most beneficial bacterial strains are those of *Lactobacillus* which remedy digestive disturbances and are known to maintain a healthy environment in the female reproductive system. Lactose intolerance, a condition involving low levels of lactase, can be eased by the ingestion of probiotics which aid in the body's digestion of lactose. A correctly operating digestive system will benefit the immune system by providing vitamins and minerals allowing probiotics to concurrently boost immune defenses. By incorporating probiotics into their products, dairy manufacturers have a chance to boost sales and improve the consumer image of dairy products. According to market reports, the probiotic's sector is expected to increase in the coming years with yogurt and yogurt beverages being the biggest contenders. Continuing education will solidify this growth. Product innovation is a key factor in increasing market share, says the author of the Frost and Sullivan report on the U.S. probiotics market; a market that will continue to expand for probiotics are for a healthy life.

**Key Words:** Probiotics, Dairy, Foods

**112 No spoon required: The changing face of yogurt.** A. J. Koons\*, *Pennsylvania State University, University Park.*

Drinkable yogurt is one of the fastest growing food segments in the world. This product is defined as a dairy-based yogurt in a liquid form, usually containing fruit or fruit flavoring. According to Nielsen market research, annual sales of drinkable yogurt from 2005 to 2006 rose 18.4%, with a 2006 value of \$7.76 billion. Drinkable yogurts offer many health benefits that may enhance both digestive and immune functions. The Dannon Company surveyed 565 physicians throughout the nation and found that doctors who regularly discuss nutrition with patients recommended consuming yogurt with live and active cultures. Many studies have demonstrated the health benefits of probiotics found in yogurts and other fermented milk products. Additionally, drinkable yogurts often contain the prebiotic inulin, a natural dietary fiber, which enhances calcium absorption and stimulates the growth of probiotic organisms. Yogurt preferences differ by consumer age and other factors. A study conducted by the University of Helsinki compared the importance of sensory properties of yogurt-type snack foods between the young and elderly. When evaluating the importance of taste, texture, and aroma, the elderly subjects gave taste a 46% importance rating compared to younger subjects who only assigned it an 8% rating. Aroma was the most significant factor in both age groups but was much more important for the younger subjects who rated its importance at 80%. A North Carolina State University study showed that preferences among strawberry drinkable yogurts differed due to ethnicity; however, it was not the sole reason affecting the choice of product. Color, sweetness, aroma, perceived health benefits, and other factors influenced consumer preference. Researchers at Washington State showed that yogurt products provide satiety. They found liquid yogurts and conventional yogurts reduce hunger and increase fullness when compared to fruit drinks and dairy fruit drinks. The popularity of drinkable yogurts should continue to increase as new products are introduced to target specific audiences in the marketplace.

**Key Words:** Drinkable Yogurt, Probiotic, Prebiotic

**113 More than what meets the eye: Labeling of milk.** A. L. Pitre\*, *Louisiana State University, Baton Rouge.*

Labeling of milk has always been important in the industry; however, over the past few years, it has become somewhat of an enemy to our dairy producers. Labels are extremely important for the saleability of milk and its products. Farmers want the consumer to be informed and want their products to be marketed as to not mislead the consumer. They want the consumer to be able to make an educated healthy choice that is safe for all. Several problems arise in this feat. For example, some companies use what is known as “absence labeling”. In absence labeling, such phrases as “antibiotic free” or “hormone free” appear on the label. This is often found with companies who try to distinguish themselves from others. These “inaccurate” labels have caused a huge uproar in our industry. Some of the labels have little to no scientific research to prove or support what they are trying to sell. Producers that are selling “hormone free” milk are claiming that their milk is bST-free but what about the amount of bGH that naturally occurs in the cow? Even if cows are not injected, a small amount of growth hormone is present in all milk, including organic milk. For more than twenty years, this specific claim has been studied extensively. There are no indications that milk used from treated and non-treated cows is compositionally different. Producers work extremely hard at keeping all food items as safe and healthy as possible. Producers strive to inform the public that all milk is safe and antibiotic free. It is their main goal to produce safe, high quality milk by caring for their cows in order to create a wholesome product. All producers are mandated by the state and federal government and must meet certain standards and pass rigorous inspections. We want all consumers to know that milk is safe and ‘does a body good’. DRINK MORE MILK!!!

**Key Words:** Milk, Labeling, Food Safety

**114 Use of whey proteins in food products.** M. Welper\*, *Iowa State University, Ames.*

Whey protein is comprised of four main types of protein:  $\beta$ -Lactoglobulin,  $\alpha$ -Lactoglobulin, bovine serum albumin, and Immunoglobulin G. They can be extracted from raw milk in a variety of ways, including micro-filtration, ultra-filtration, and ionization. Whey proteins are often added to foods as a binding agent, egg replacement, or as a functional ingredient in products such as ice cream and milk replacer. In addition to these traditional uses, nutrition experts are now investigating the use of whey protein in dietetic and health foods, as well as a key ingredient in infant formulas. Recent research has shown that, when used along with a healthy diet and exercise, whey proteins may have a positive affect on muscle mass, bone density, cardiovascular health, and immunity; also reducing/preventing symptoms of hypertension and type II diabetes. One of the main reasons for these beneficial characteristics may be the protein’s ability to enhance absorption, transportation, and synthesis of several key nutrients, like calcium, in the body’s digestive system. Whey protein also contains a broad array of essential amino acids and immunoglobulins; both of which are critical components in the diets of many teens and adults. The novel uses of whey proteins will not only provide a highly nutritional and versatile food additive but also additional revenue for today’s dairy producers.

**Key Words:** Whey Protein