W75 The effects of incorporating sweet potato and peanut flours on sensory properties of probiotic yogurt in Mwanza, Tanzania. S. Hekmat* and S. Varriano, *Brescia University College, London, Ontario, Canada.*

Yogurt is a nutrient-dense product that serves as an excellent vehicle to transfer probiotic microorganisms and other nutritional additives to consumers. Vitamin A deficiency and protein-energy malnutrition are the 2 common dietary deficiencies in some resource-poor African communities. Addition of sweet potato and peanut flours in certain African staples has been an effective method to increase the pro-vitamin A content of the diet and to alleviate protein-energy malnutrition, respectively. The objective of this study was to evaluate the effects of incorporating sweet potato and peanut flours on sensory properties of probiotic yogurt in Mwanza, Tanzania. Standardized milk (3.5% fat) with 4 and 6% sweet potato flour (SPF), 4% peanut flour (PF), 3 and 5% milk powder (MP), and one with no additives (C) were prepared. The samples were heat treated at 85°C for 30 min, cooled to 37°C and inoculated with standard yogurt cultures and *Lactobacillus rhamnosus* GR-1 (4%). All yogurt samples were fermented and cooled to 4°C. Consumer taste panels were conducted. A 9-point hedonic scale was used to evaluate and compare the samples. The SPF (4%) sample was rated significantly ($P < 0.05$) higher for flavor and overall acceptability compared with MP (5%), PF (4%), and SPF (6%) samples. However, the SPF (6%) yogurt had a significantly ($P < 0.05$) lower appearance score compared with MP (3%) and C samples. The addition of PF (4%) was not desirable and resulted in low flavor and overall acceptability scores. This study suggests that addition of moderate amount of sweet potato flour to yogurt improves the flavor and overall acceptability of the product and can potentially be used as a nutritional additive to combat vitamin A deficiency in Africa.

Key words: yogurt, sweet potato flour, peanut flour

W76 Riboflavin photodegradation in yogurt with added lutein. L. D. Domingos, A. A. O. Xavier, R. A. Jorge, A. Z. Mercadante, A. J. Petenate, and W. H. Viotto*, *UNICAMP, Campinas, São Paulo, Brazil.*

Lutein is a carotenoid possessing biological activity against degenerative diseases, such as the decrease and prevention of the occurrence of age-related macular degeneration. It also shows antioxidant properties and can exert a protective function in foods. Dairy products are light sensitive due to the presence of riboflavin, a sensitizer capable of absorbing luminous energy and transferring it to reactive oxygen molecules, unleashing oxidative components on the milk components, resulting in nutritional losses and sensory alterations. The current work evaluated the oxidative stability of yogurt with an added lutein-based preparation, in the presence and absence of light and stored for 35 d under refrigeration. The 0.3% lutein formulation used was obtained from Vegex Lutein WS and is a natural dye from Christian Hansen (Horsholm, Denmark) used for food purposes. Yogurts were manufactured with and without the addition of 1.5 mg per 120g portion (estimated value of 11.5 µg/g yogurt) in the final product, and characterized with respect to their total carotenoid and riboflavin contents. Degradation of the riboflavin and lutein were monitored during refrigerated storage at 5°C. A split-split-plot design was used for analyses of lutein and riboflavin contents and the results were evaluated by ANOVA. In the yogurts without lutein and exposed to light, there was a reduction in the riboflavin content and the formation of oxidized riboflavin products. In the yogurts with lutein, the riboflavin and lutein contents remained constant throughout the entire storage period in the light, the same occurring in the samples stored in the dark. The dye lutein impeded the photo-degradation of riboflavin in the yogurt exposed to light. All the samples presented constant lutein contents throughout the entire refrigerated storage period, signifying that all the lutein added remained available up to the end of the storage period.

Key words: yogurt, lutein, riboflavin

W77 The physicochemical and sensory properties of milk supplemented with dispersable nanoginseng during storage. Y. J. Ahn* and H. S. Kwak, *Sejong University, Seoul, Korea.*

This study was carried out to investigate the dispersibility of nanoginseng (600 ~1,000 nm) in milk and to determine the effects of the addition of the ginseng into the milk on the physicochemical and sensory attributes of the milk during storage. To be dispersable nano- ginseng, 0.5% nano ginseng powder was added into the sterilized water, swelled at 80°C for 2 h, added 0.3% polyglycerol monostearate, stirred at room temperature with 800rpm for 24 h and obtained the supernatant after centrifugeting. The dispersable nanoginsengs (2, 4, 6, 8%) were added into milk and stored at 5°C for 16 d, and pH, DPPH for antioxidation, color and sensory evaluation were studied. The pH was ranged from 6.65 to 6.79 during storage. DPPH showed that the additions of 2, 4, 6 and 8% dispersable nanoginseng increased 1.3, 1.7, 2.0 and 2.2 times higher activity, respectively. The color value, L, in the milk, was not significantly influenced by adding the nanoginseng solution (2 ~8%, v/v) ; whereas the a and b values significantly increased with the solution ($P < 0.05$). In sensory attribute, earthy, bitterness, astringency and overall acceptability were not significantly different between control and 4% addition of the solution ($P < 0.05$). Based on the data obtained from this study, it is concluded that the low concentrations (2 ~4%) of the nanoginseng solution could be used to develop a nanopowdered ginseng-added milk without significantly adverse effects on the physicochemical and sensory properties.

Key words: nanoginseng, dispersibility milk

W78 Optimum condition for crosslinked β-cyclodextrin and recycling for cholesterol removal in milk and cream. Y. K. Lee* and H. S. Kwak, *Sejong University, Seoul, South Korea.*

This study was carried out to investigate the optimum condition of crosslinked β-cyclodextrin (β-CD) and the recycling for cholesterol removal in milk and cream. The crosslinked β-CD was prepared with 15% adipic acid solution, and water solubility of the β-CD was measured for the optimum condition based on mixing temperature (20, 40, 60 and 80°C), mixing time (1, 2, 3 and 4 h), crosslinking temperature (20, 40, 60 and 80°C), crosslinking reaction time (24, 36, 48 and 60 h) and cooling time (48, 72, 96 and 120 h). For recycling study, recyclable yield and cholesterol removal rate were measured by 2 and 15% adipic acid added crosslinked β-CD in milk and cream, respectively. In the results of this study, optimum condition was 80°C mixing temperature, 2 h mixing time, 60°C crosslinked temperature, 24 h crosslinking reaction time and 48 h cooling time. After being determined the optimum condition, the recyclable yields of the crosslinked β-CD ranged from 90.01 to 55.17% in 6 times of recycling and the percentage of cholesterol removal by 15% crosslinked β-CD was over 90% till 8th time recycling. On the basis of the results, this study suggested that

15% adipic acid added crosslinked β-CD maximized recyclable yield and during recycling cholesterol removal was improved.

Key words: optimization, crosslinked β-cyclodextrin, recycling, milk, cream

W79 Optimization of water in oil in water (W/O/W)-microencapsulated iron for milk fortification (I). S. Y. Lee*, S. I. Ahn, and H. S. Kwak, *Sejong University, Seoul, South Korea.*

This study was designed to examine the microencapsulation efficiency of iron and to measure the stability and bioavailability of iron microcapsules in vitro. Core material was ferrous sulfate and coating materials were medium-chain triglyceride (MCT) for W/O and whey protein isolate (WPI), arabic gum (AG) or maltodextrin (MD, DE 18) for W/O/W. The highest emulsion stability index (ESI) for W/O iron emulsion was 98% when the ratio of water to oil was 4:6 and 1% polyglycerol polyricinoleate (HLB 0.6) was added as primary emulsifier. The highest yield of W/O/W iron emulsion was 93% when the ratio of W/O to water was 2.5:7.5, coating material was 30% WPI, 1% ferrous sulfate as a core material and 1% (w/v) polyoxyethylene sorbitan monolaurate (HLB 16.7) as a secondary emulsifier. The smallest size of spray dried microcapsule was 10.1Î1/4m with WPI and the largest 22.6Î1/4m with AG. The moisture content of the capsules were within 2% with all coatings used. The maximum absorbed moisture contents were 28, 24 and 30% with MD, WPI, and AG, respectively, under 98% relatively humidity. In the in vitro study only 1.0~2.1% of iron was released in simulated gastric fluid at 37°C pH 2 for 0, 30, 60, 90 and 120 min. Comparatively, iron release increased dramatically to 70, 60, and 46% with WPI, MD, and AG, respectively, in the simulated intestinal fluid at 37°C pH 7 for 0, 30, 60, 90 and 120 min. Based on our results, WPI was the most efficient, stable and bioavailable.

Key words: W/O/W, microencapsulation, iron

W80 Water in oil in water (W/O/W)-microencapsulation iron for milk fortification (II). S. Y. Lee*, S. I. Ahn, and H. S. Kwak, *Sejong University, Seoul, South Korea.*

This study was carried out to investigate the fortification of iron into milk by means of W/O/W microencapsulation technique. Coating materials were medium-chain triglyceride (MCT) for W/O and whey protein isolate (WPI) for W/O/W. Core material was ferrous sulfate. Spray dried iron microcapsules were made and added (0.1, 0.3, 0.5 and 0.7%) into milk and the pH, released iron, TBA, color and sensory attributes of iron microcapsules in milk were measured during storage at 4C for 0, 4, 8, 12 and 16 days. All experiments were run in triplicate. Iron fortified milk had kept pH between 6.78 and 6.88 during storage. The amounts of the released iron from the capsules in the milk were 0.17~0.20, 0.48 and 0.71ng/ml from 0.1~0.3, 0.5 and 0.7%, respectively. The TBA value for fat oxidation showed in the range of 0.17 to 0.22 absorbance at 450nm, which has no significant difference between control and samples during storage ($P < 0.05$). In color, b- and a- values of the sample milk containing 0.5~0.7% iron microcapsules were significantly different from control ($P < 0.05$). In sensory evaluation, rancidity, cooked and metallic parameters revealed significant differences with increased iron encapsulated microcapsules, however, overall acceptability did not show significant difference during storage ($P < 0.05$). Based on the data obtained from this study, it is concluded that 0.3% powdered iron microcapsule could be applicable for iron-fortified milk.

Key words: W/O/W, microencapsulation, iron fortification, milk

W81 Development and characterization of synbiotic quark cheese. A. F. Carvalho*[1], M. M. Gonçalves[1], G. M. Tavares[1], J. Y. Suda[1], N. F. Nogueira Silva[2], and J. B. P. Chaves[1], *[1]Federal University of Viçosa, Viçosa, MG, Brazil, [2]Institut National de la Recherche Agronomique STLO, Rennes, Bretagne, France.*

A current food market trend is the consumers search for healthier, low fat, low sugar and more nutritious products. In this context, functional dairy products often added with probiotics and prebiotics stand out among other products of similar nature. Probiotic bacteria are live microorganisms which when consumed promote health benefits to the host. Prebiotics are non-digestible ingredients that stimulate the selective growth of beneficial bacteria in the intestine. This work aimed to develop a symbiotic skimmed Quark cheese, using a new manufacturing technology, which is feasible for small volume production. The prebiotic ingredient inulin (BENEO Raftiline) and 3 probiotics (*Lactobacillus acidophilus* LA5, *Bifidobacterium animalis* BB12 and *Lactobacillus delbrueckii* UFV H2b20) were used. Three formulations were produced, differing in the probiotic added to the fermented mass, in 3 replications. Microbial cell viability was monitored during storage at refrigerated temperature. Effects of probiotic addition on the cheese physico-chemical and rheological characteristics and sensory acceptance were determined at 5, 15 and 25 d. Regression analysis did not detect significant change ($P > 0.05$) in microbial count up to 25 d storage, with high counts as log cfu.g-1 in the range of 6.4 to 6.9. There was no significant change ($P > 0.05$) in cheese acidity over time. The product was characterized as a pseudoplastic fluid and its rheological characteristics did not vary significantly ($P > 0.05$) in cheeses with different probiotics. Addition of stabilizers, thickeners and fiber raised consistency and apparent viscosity levels of the product. The new technology allowed the production of a type cheese with good sensory acceptance and probiotics addition did not cause any change perceived by consumers. This product can be considered, therefore, a potential carrier for probiotic microorganisms.

Key words: prebiotic, probiotic, cheese

W82 Comparison of quantitative neutral volatile compounds in regular cream cheese and cholesterol-removed cream cheese. S. S. Jeon*, S. J. Lee, and H. S. Kwak, *Sejong University, Seoul, Korea.*

This study compared quantitative flavor compounds in regular cream cheese (RCC) and cholesterol-removed cream cheese (CRCC), which was treated by crosslinked β-cyclodextrin, and were stored at 7°C for 4weeks. To quantify the volatile compounds, the cheeses (0, 1, 2, 3 and 4weeks) were extracted and analyzed by solid-phase microextraction (SPME) and gas chromatography (GC), respectively. Tentatively identified flavor compounds were mainly 11 from fatty acid. One amine was present in RCC, and 2 lactones and miscellaneous were in CRCC and one was in RCC, respectively. However, 2 ketones were present in both cheeses. In quantitative analysis, hexanoic acid and octanoic acid were not significantly developed ($P < 0.05$) in both cheeses. N-Decanoic acid was produced higher in RCC (0.158 ppm) than in CRCC (0.155 ppm). Benzoic acid appeared at 3 week storage and developed from 0.1321 to 158 ppm in RCC and from 0.106 to 0.130 ppm in CRCC. Dodecanoic acid was found at an insignificant amount in both samples. Tetradecanoic acid kept ranged from 0.151 to 0.161 ppm in both cheeses. However, z-11-tetradecanoic acid produced in only CRCC from 0.120 to 0.135 ppm. Tridecanoic acid was lower than

other acids. N-hexadecanoic acid was produced at 0.153 ppm in RCC and 0.139 ppm in CRCC and remained constant. Oleic and 9, 12-octadecadienoic acid developed only from 0.118 to 0.144 ppm and from 0.034 to 0.073 ppm in CRCC, respectively. The ketone, 2-tridecanone was produced 0.032 and developed to 0.050 ppm only in RCC and 2-pentadecanone produced 0.060 and developed to 0.083 ppm in both cheeses. The lactone, 2H-pyrane-2-one, tetrahydro-6-pentyl, was produced 0.050 ppm and developed to 0.074 ppm in both cheeses. However, 2H-pyran-2-one, 6-heptyltetrahydro kept 0.140 ppm only in CRCC. As amine, 5-(p-aminophenyl)-4-(o-tolyl)-2-thiazolamine and as other, phenol, 4, 6-di (1, 1-dimethylenthyl)-2-methyl kept 0.050 ppm only in RCC. On the basis of our results, we conclude that the quantity of flavor compounds in regular cream cheese and cholesterol-removed cream cheese was similar except for a few components.

Key words: cream cheese, cholesterol removal, flavor

W83 Comparison of lipolytic and proteolytic changes between commercial bovine milk and caprine milk yogurts stored under refrigeration. J. Oglesby and Y. W. Park*, *Fort Valley State University, Fort Valley, GA.*

In European and Asian countries, there is a long tradition of consumption of fermented milks such as yogurt, which is associated with good nutrition and health benefits of the products. A study was conducted to determine storage stability of caprine milk yogurt compared with bovine milk counterpart in relation to lipolysis and proteolysis. Commercial bovine milk yogurt (CBY) and commercial caprine milk yogurt (CCY) were purchased from local retail stores, and Fort Valley State University plain caprine milk yogurt (FVCY) were manufactured using direct vat set (DVS) lactic culture (YC-180, Chr. Hansen, Inc., Hoersholm, Denmark). The caprine milk used was the late lactation bulk milk from the University dairy goat herd consisted of Saanen, Alpine, and Nubian breeds. All experimental yogurt samples were subjected to 4°C refrigeration storage for 4 weeks. Acid degree value (ADV), pH, water soluble nitrogen (WSN) and basic nutrient contents of all yogurt samples were analyzed to compare lipolytic and proteolytic changes between the products during 0, 2 and 4 weeks of storage. Mean dry matter and fat content (%) of CBY, CCY and FVCY products were 11.28, 3.05; 13.1, 3.65; 11.03, 3.40, respectively, indicating the CCY contained the highest total solids and fat contents among all tested varieties. The initial and final ADVs of CBY, CCY and FVCY were 0.503, 1.009; 0.756, 0.685; 0.707, 1.094, respectively, showing significant lipolysis occurred in the CBY and FVCY, while CCY showed a minimal lipolytic change. The pHs of all 3 products ranged from 4.05 to 4.12, suggesting no significant changes occurred in pH, while the respective WSN (%) of CBY and CCY at 0, 2, and 4 weeks were 3.40, 5.55; 3.93, 4.77; 5.07, 6.75, showing proteolysis was increased in the products. It was concluded that the commercial caprine yogurt had less lipolysis than the CBY and FVCY, probably due to the added stabilizer, whereas proteolysis of all 3 products steadily increased during the storage.

Key words: yogurt, lipolysis, proteolysis, caprine milk

W84 impact of protein content, total solids, and milk protein solids on the functionality of nonfat yogurt. K. N. Shah* and L. E. Metzger, *Midwest Dairy Foods Research Center, Dairy Science Department, South Dakota State University, Brookings.*

Nonfat yogurt is a popular fermented product available in various forms. In the US, the Code of Federal regulations requires >8.25% milk solids in the yogurt base. NDM is a common ingredient utilized to provide milk solids in yogurt produced in the US. However, in International markets, skim milk powder (SMP), milk protein concentrate (MPC), and dried permeate are utilized in yogurt formulations. The protein content, total solids (TS) and source of milk protein may have an impact on the functionality of yogurt. Additionally, storage of dairy ingredients can result in quality deterioration. For example, the storage of high protein MPC at > 20°C for more than 6 mo results in loss of solubility of MPC. The objective of this study was to evaluate the effect of different milk solids sources at various protein/TS ratios and impact of storage of powders on the viscosity and whey separation of nonfat yogurt. Three different lots of SMP, NDM, MPC40 and MPC70 were collected from US manufacturers and each lot was divided into 3 portions. A portion was analyzed after 3, 9, and 15 mo of storage at 25°C. A Rapid Visco Analyzer method was utilized to produce yogurt from each formulation. At each storage time, yogurt formulations with protein (%)/TS (%) ratios (4/12.5, 4.5/13.5 and 5/15.5) were produced from each lot of SMP, NDM, MPC40, and MPC70.Varying amounts of deprotonized whey powder were included to standardize the TS content. The data was analyzed by repeated measures using PROC GLM in SAS. SMP and NDM yogurt viscosity were significantly ($P < 0.05$) higher than MPC40 and MPC70 at each protein/TS ratio. Additionally, MPC70 yogurt viscosity was significantly ($P < 0.05$) lower than MPC40 yogurt viscosity at each protein/TS of yogurt. Whey separation values of SMP were significantly ($P < 0.05$) higher than NDM at each protein/TS of yogurt. The viscosity of yogurt manufactured from all powders were significantly ($P < 0.05$) affected by storage. However, the change in viscosity during storage was small in all treatments at all protein/TS ratios. The usage of various milk protein sources significantly affects the functional attributes of nonfat yogurt.

Key words: nonfat yogurt, viscosity

W85 Sensory evaluation of various probiotic yogurts in Mwanza, Tanzania. S. Hekmat*[1,2], J. Hemsworth[1], H. Soltani[1], and G. Reid[2], *[1]Brescia University College, London, Ontario, Canada, [2]Canadian Research and Development Center for Probiotics, London, Ontario, Canada.*

Yogurt fermented with *Lactobacillus rhamnosus* GR-1 has shown therapeutic properties and its introduction into a dietary regimen of certain population in Mwanza, Tanzania has been an effective method in treating and preventing urogenital infections and in improving the nutritional status of people living with HIV/AIDS. The objective of this study was to evaluate sensory properties of various probiotic yogurts containing local fruits and vegetables found in Mwanza, Tanzania. The yogurt mother culture was prepared by fermenting a milk mixture (3.25% fat) containing 0.33% yeast extract and 0.4% inulin. Four flavors of probiotic yogurt containing at least 10^7 cfu/ml of *Lactobacillus rhamnosus* GR-1 were made using widely available fruits and vegetables in Mwanza such as mango, pineapple, cucumber, and orange at the rate of 10% w/v. Consumer taste panels were conducted using a Hedonic scale of 1–9 (1 = dislike extremely; 9 = like extremely). The results showed that the mango yogurt had the highest overall mean score (7.3) and the cucumber yogurt had the least overall mean score (6.1). The mango and orange yogurts were rated significantly higher than the cucumber yogurt ($P < 0.05$). The appearance and texture of cucumber yogurt were rated significantly lower ($P < 0.05$) than the other yogurts with the mean scores of 6.0 and 5.6, respectively. These findings will be used as a guide to formulate a probiotic yogurt that is feasible and acceptable by consumers in Mwanza, Tanzania.

Key words: probiotics, yogurt, sensory

W86 Effect of pasture feeding and dairy cattle breed on vitamin E and β-carotene content in milk. V. M. Marino[1], I. Schadt[1], S. La Terra[1], M. Caccamo[1], G. Licitra[2,1], and S. Carpino*[1], *[1]CoRFiLaC, Regione Siciliana, Ragusa, Italy, [2]DISPA, Catania University, Catania, Italy.*

It has been shown that several factors such as breed, feed source, and animals′ health status might influence milk vitamin E and β-carotene (AO). The aim of this study was to examine the effects of pasture feeding and dairy cattle breed on AO concentrations in milk. Four dairy farms located in southeastern Sicily were selected; 2 with both Holsteins (H) and Brown Swiss (BS) cows and 2 with only Modicana (M) local breed cows. Bulk milk of each breed per farm was sampled 4 times during 3 experimental periods (P1 = March / April, P0 = June / July, and P2 = November / December). Samplings within period occurred with weekly intervals. Pasture was available in P1 and P2 but not in P0. Periods P1 and P2 differed by botanical composition and plant maturity. During P0 cows were grazing stubble. Additional hay and concentrate was supplemented during all periods. Pasture intakes have been calculated using CPM-Dairy. Milk AO contents were analyzed by HPLC. Both, milk β-carotene and α-tocopherol were highest during P1, lowest during P2 and intermediate during P0 ($P < 0.001$). Least squares means (μg / g fat) ± standard deviations during P1, P2 and P0 of β-carotene were $9.68^{a} \pm 0.07$, $0.84^{c} \pm 0.07$, $2.45^{b} \pm 0.07$, respectively, and relative to α-tocopherol $16.15^{a} \pm 0.05$, $11.15^{c} \pm 0.05$, $13.28^{b} \pm 0.05$, respectively. Milk from BS contained more β-carotene compared with H ($P < 0.05$), but α-tocopherol levels were not affected. Milks from M had the same levels of β-carotene compared with BS cows and had significantly higher levels of α-tocopherol ($P < 0.05$) compared with the milks from the other breeds. However, the latter results might have been confounded by the significant higher pasture intake of M relative to the BS and H. Low AO milk contents measured during P2 could be explained by cows′ vitamin consumptions of body tissue resources during the summer period, when AO were lacking in the diet. Body resources during P2 first had to be restored before AO could be released into milk. Pasture benefits relative to AO milk content might be obtained only after a minimum necessary exposure period of cows to pasture.

Key words: milk, breed, antioxidants, pasture

W87 The fatty acid composition and properties of summer and winter butter. O. Tsisaryk*, *Lviv National University of Veterinary Medicine and Biotechnologies, Lviv, Ukraine.*

The objective of the study was to determine the fatty acid composition, nutritional value and spreadability of summer butter (S) manufactured from milk when dairy cows were grazing and winter butter (W) when cows were fed indoors. Milk was collected from dairy cows in August and December, and butter was manufactured, 3 times for each period. Butter samples were conserved at –20°C until fatty acid analysis by GLC and stored at 4°C per rheological properties and sensory analysis. The fatty acid methyl esters were separated on a column SP-2560 (100 m × 0.25 mm i.d. × 0.20 μm 100% bis-cyanopropyl polysiloxane, Supelco) in a chromatograph Hewlett Packard 6890. The nutritional value of butter was analyzed under the indices. Butter samples were tested for resistance to penetration. The percentage of the sum medium-chain saturated fatty acids (C12-C16) decreased ($P < 0.05$) from 49.5 in W butter to 48.5% in S butter, especially C16:0 – from 32.9 in W butter to 30.9% in S butter. There was an increase ($P < 0.05$) in the ratio of unsaturated to saturated fatty acids in S butter. The sum of unpaired fatty acids and branched-chain ones also increased in S butter. The concentration of cis-9, cis-12, cis-15 C18:3 increased from 0.4 in W butter to 0.9% in S butter, unlike cis-9, cis-12 C18:2, which decreased from 2.3 in W butter to 1.5% in S butter. The ratio of n-3 to n-6 fatty acids increased to 0.63 ($P < 0.05$) in S butter from 0.23% in W butter. The total trans-isomer concentrations were higher in S butter. The concentration of trans-11 C18:1 increased from 1.2 in W butter to 2.0 in S butter and cis-9, trans-11 C18:2 increased from 0.6 to 1.1 respectively. Atherogenicity, thrombogenicity and health promoting indices were 2.82, 1.98 and 0.40 in W butter and 2.69, 1.90 and 0.41 in S butter respectively. Penetrometer readings indicated that S butter was softer at 4°C and the spreadability index also was higher in S butter. Thus, S butter was found to have a higher biological value and a better texture.

Key words: summer and winter butter, fatty acids, properties

W88 Hungarian Trappist (*Trapista*) cheese production from Holstein and Jersey cows′ milk. L. Varga*, *Department of Dairy Science, Institute of Food Science, Faculty of Agricultural and Food Sciences, University of West Hungary, Mosonmagyarovar, Hungary.*

Milk composition is widely known to affect the yield and quality of subsequent dairy foods. Hungarian Trappist (Trapista) is a traditional semi-hard cow′s milk cheese with a mild flavor and good melting properties. Making up approximately 70% of the total ripened cheese consumption, Trapista is by far the most popular cheese in Hungary. The objective of the current experiments was to compare the composition of milk and the quality, yield and production costs of Hungarian Trappist cheese from Holstein and Jersey cows. From November 2008 through July 2009, a total of 260 tonnes of Holstein and Jersey milk were processed in a cheese factory located in the western part of Hungary. Raw bulk milks were analyzed for somatic cell count (SCC), fat, protein and extraneous water. As for Trappist cheese, major chemical components (i.e., total solids, fat and protein) and pH were determined and cheese yield and production cost calculations were also made. The results showed that Jersey milk had higher concentrations of most milk components measured, including protein, fat and SCC, than did Holstein milk. No extraneous water was detected in the raw milk batches processed. The mean total solids and fat-in-DM contents of Trappist cheese from Holstein milk were found to be 56.80% and 50.17%, respectively, whereas the levels of the same components in cheese from Jersey milk were 55.92% and 49.12%, respectively. The 2 cheese products had an identical mean pH value of 5.15 after salting. Jersey milk yielded 4.4% more cheese per kg than Holstein milk using fat standardized cheesemilk. In addition, compared with Holstein Trappist, the manufacture of each kg of Jersey Trappist resulted in the production of 95.2 g more milkfat. All things considered, at October 2009 prices, the production costs of Trappist cheese from Jersey milk were 0.55–0.70 USD/kg lower than those of Holstein Trappist in Hungary.

Key words: Trappist cheese, Holstein milk, Jersey milk

W89 Long-term ethanol or acetic acid supplementation do not impair sensory milk quality. J. L. P. Daniel*, L. G. Nussio, M. H. F. Spotto, T. L. Cardoso, A. Sá Neto, and M. Zopollatto, *University of Sao Paulo, College of Agriculture "Luiz de Queiroz", Piracicaba, SP, Brazil.*

Ethanol and acetic acid are common end products from tropical silages. The objective of this study was to determine whether high dose of ethanol or acetic acid might affect sensory milk quality. Thirty lactating Holstein cows averaging 40 kg/d of milk at beginning of trial were grouped in 10 blocks and fed one of the 3 diets during 7 weeks: Control (33% Bermuda hay + 67% concentrates); Ethanol (control diet + 5% ethanol, DM basis); and Acetic acid (control diet + 5% acetic acid, DM basis). Ethanol and acetic acid were diluted in water (1:2) and sprayed onto total mixed ration twice daily. The same amount of solution was replaced with water in the control diet. During the 1st week of the trial, cows received half-dose of these chemical compounds. Unpreserved and unpasteurized milk was sampled on 6th week of trial and judged immediately after milking for appearance, aroma, taste, and global quality by a sensory panel of 56 non-trained persons. Scores were evaluated on a 9-point scale (where 1 = poor quality to 9 = high quality). Since original data did not fit normal distribution, a Box-Cox transformation was performed. All diets led to well accepted milk batches (score means >6.6). Milk sensory attributes were similar across treatments ($P > 0.15$), except for global quality ($P = 0.02$), where acetic acid and ethanol treatments were slightly improved than control milk (7.56, 7.48 and 7.28 respectively). Long-term ethanol and acetic acid supplementation did not impair sensory milk quality which is in agreement to the blood parameters (not showed).

Key words: aroma, taste, appearance