process cheese from Queso Fresco (QF) to help manufacturers salvage excess trimmings, out of spec cheese, etc. QF is a soft, unripened and non melting Hispanic cheese (containing 46.8% moisture, 27.2% fat, 18.5% protein, 2.8% salt and pH 6.5). Pasteurized process Queso Fresco (PPQF) was manufactured on 3 occasions from separate lots of QF (aged 5 d, 1 mo or 2 mo) using 3% sodium citrate or disodium phosphate as emulsifying salt and food grade citric acid for pH adjustment. Mean composition of PPQF was 46.8% moisture, 26.4% fat, 17.8% protein, 2.8% salt, and pH 5.6-7.0. Meltability (mm) and textural parameters (hardness, cohesiveness, springiness, gumminess and chewiness) of PPQF were determined by modified Olson and Price method and TA-XT2 Texture Analyzer, respectively. Meltability of PPQF was significantly ($P < 0.001$) influenced by the type of emulsifying salt and citric acid × emulsifying salt. There was positive correlation but insignificant effect of PPQF moisture, protein and fat on meltability. All texture parameters except springiness were significantly ($P < 0.05$) decreased with cheese age. All texture parameters except cohesiveness were significantly ($P < 0.05$) affected by emulsifying salt × citric acid ($P < 0.001$), moisture × pH ($P < 0.05$) and fat × pH ($P < 0.05$). PPQF hardness was significantly influenced by emulsifying salt ($P < 0.01$) and cheese moisture × protein ($P < 0.05$). In addition, PPQF hardness, springiness, gumminess and chewiness were significantly ($P < 0.05$) increased with decreased cheese pH. Results show that QF age influenced PPQF texture but not meltability. However, meltability and texture parameters of PPQF were influenced by type of emulsifying salt and pH adjustment of QF before processing.

Key Words: Pasteurized process Queso Fresco, Metability, Texture

174 Effect of total calcium content, intact casein content, and pH on the functional properties of process cheese. R. Kapoor* and L. E. Metzger, *MN-SD Dairy Foods Research Center, University of Minnesota*, *St. Paul, MN*.

The objective of this study was to evaluate the effect of total calcium content, intact casein content, and pH on the functional properties of process cheese. Eight process cheese food (PCF) formulations with two levels each of total calcium content (Ca) (0.45 and 0.65 %), intact casein content (IC) (14 and 18 %), and pH (5.5 and 6.1) were manufactured on a small-scale using a rapid visco analyzer (RVA). All the eight PCF were formulated so that their total moisture, fat, and protein content were the same. Therefore, the only chemical properties that were different in the eight PCF were Ca, IC, and pH. All the PCF manufactured were analyzed for functional properties including un-melted texture and melted texture using texture profile analysis (TPA) and RVA-melt test, respectively. The mean values of TPA-hardness, RVA-hot apparent viscosity and time at 5000 cP ranged from 53 N, 360 cP and 12.35 min respectively for the PCF formulated to 0.45 % Ca, 14 % IC, and a pH of 5.5 to 117 N, 716 cP and 11.09 min respectively for the PCF formulated to 0.65 % Ca, 18 % IC, and a pH of 6.1. As IC of PCF increased, its TPA-hardness significantly increased ($P < 0.05$). Additionally, as Ca and IC of PCF increased, its RVA-hot apparent viscosity significantly increased ($P < 0.05$) and the time at 5000 cP significantly decreased ($P < 0.05$). Consequently, Ca, IC, and pH of a process cheese are critical chemical properties that determine the functional properties of the process cheese. This information will help process cheese manufacturers to appropriately balance these chemical properties during process cheese manufacture to produce process cheese with consistent functional properties.

Dairy Foods: Political, Economic, and Scientific Considerations of Milk Component Utilization

175 Withdrawn by author.

176 Status of milk component separation and utilisation in Europe. J. F. Kleibeuker*, *European Dairy Association*, *Brussels, Belgium*.

Milk has been an ingredient in food preparations for many hundreds, if not thousands, of years. This is because both the nutritional and taste contribution of milk as well as its funcionality in the physical structure of a broad range of preparations has been appreciated by consumers. In the development of the industrial production of food products, also a lot of work has been done on milk based ingredients. Separation of milk in various fractions allowed a further optimalisation of the contribution of milk based ingredients to food products quality. For more then 50 years, European dairy industies have worked on the development of a range of products such as casein, whey proteins, lactose and milksalts. A survey will be given of the present separation and modification techniques and of the market environment that stimulated the development of customer designed products.

Key Words: Milk ingredients, Market orientation, Market policies

177 Conditions of competition for milk protein products in the U.S. market. J. Coleman*, *U.S. International Trade Commission*, *Washington, DC*.

This paper draws from a Congressionally-mandated study by the U.S. International Trade Commission on conditions of competition for milk protein products in the U.S. market. This paper identifies recent trends in production and international trade in milk protein products. It describes how economic and non-economic factors (such as food regulations and standards) have impacted product development and international trade in milk components. The paper also discusses the major uses and applications for such products in processed food and pharmaceutical products.

Key Words: Milk protein, International trade, U.S. International Trade Commission