Effect of Different Coagulants and Fat Content on the Quality of Ricotta Cheese

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Whey is a major by-product in cheese processing which is considered as a rich source of whey protein and lactose. In Sri Lanka whey is largely discarded without taking any valuable usage. Ricotta is a low fat and versatile cheese, popular in many countries which can be produced using w hey. This study was conducted to compare the chemical and sensory properties of ricotta cheese, developed using whey enriched with full cream milk (fat 3.5%) or skim milk (fat <0.1%) with acetic acid or citric acid coagulants. Whey was freshly collected from a cheddar cheese processing plant and processed in to ricotta cheese within the same day. Fresh whey was heated without agitation and milk and coagulant were added at the temperature of 71^{o}C and 85^{o}C respectively. Curd was collected in a cheese cloth, drained for 1h, packed and stored at 4^{o}C. Four ricotta cheese batches were prepared, namely full cream milk-acetic acid (FMAA), full cream milk-citric acid (FMCA), skim milk-acetic acid (SMAA), and skim milk citric-acid (SMCA). Prepared ricotta cheese were evaluated for sensory, physicochemical (pH, texture, color, titratable acidity, moisture, total solid, fat, ash, protein and carbohydrate) and microbiological properties. Sensory evaluation data were analyzed by Friedman non-parametric test. FMAA ricotta cheese gained significantly higher ($p<0.05$) overall acceptability among all cheese types. Addition of citric acid gave low yield to ricotta cheese (22%-FMCA and 20%-SMCA) as compared to acetic acid (25%-FMAA and 23%-SMAA). Significantly lower fat (2.40%), ash (32.68%) and moisture content (62.92%) were obtained in SMAA ricotta cheese ($p<0.05$). In conclusion, whey can be successfully converted into a value added product using full cream milk and acetic acid. This could be a good solution for the wastage and high biological oxygen demand (BOD) in environment pollution.

Keywords: Acetic acid, Coagulation, Fat, Ricotta cheese, Skimmed milk