QUALITY ASPECTS OF FETA CHEESE MANUFACTURED FROM MIXTURES OF COW'S MILK AND GOAT'S MILK

BY

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DECLARATION

I, the undersigned, hereby declared that this dissertation is my original work and has never been submitted at any university for a degree.

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ABSTRACT

Title:- Quality Aspects of Feta Cheese Manufactured from Mixtures of Cow's Milk and Goat's Milk

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Pure goat's milk and pure cow's milk were analysed for microbial, physical and chemical quality. The milks were mixed in the proportions of 100% cow's milk (treatment 1), 65% cow's milk + 35% goat's milk (treatment 2), 35% cow's milk + 65% goat's milk (treatment 3) and 100% goat's milk (treatment 4). Feta cheese was made from these milks and the experiment was done three times (three batches in all).

Physical, chemical and microbial analysis were performed on the Feta cheeses on day 2, 7, 14 and 21 after manufacturing. Sensory evaluation of the cheeses was done only on batch 3 after ripening the cheeses for a period of 21 days.

Analysis of the Feta cheeses revealed that the treatments differed significantly ($p < 0.05$), especially in terms of fat content, total solids content, log total plate count (TPC), texture, pH, protein content and free fatty acids (FFA) content. Other quality aspects, namely soluble protein content, NaCl content and sensory evaluation scores did not differ significantly ($p > 0.05$) between treatments. The pH, log TPC, soluble protein content, FFA content, NaCl content and texture changed significantly ($p < 0.05$) during ripening.

The Feta cheeses made from high proportion of goat's milk (treatments 3 and 4) had higher microbial counts, FFA content and soluble protein content than cheeses made from milk with higher proportions of cow's milk. Although treatments 2 and

3 almost overlapped in soluble protein content, the values concerning these three quality aspects generally increased as the proportion of goat's milk used for cheese manufacturing increased (the trend being treatment 1<2<3<4). Conversely, the pH values decreased systematically from treatment 1 to 4.

The mean fat content of the Feta cheeses increased systematically with increase in the proportion of cow's milk, while the mean total protein content followed the reverse pattern. In all the cheeses, the lactose content was almost negligible from the second day after manufacturing. The texture analysis results fluctuated significantly with time and between the treatments and there was no logical trend found.

Despite the difference in composition and other characteristics, the acceptability of all the Feta cheeses was the same as they all received a sensory evaluation score of "like slightly".

UITTREKSEL

Titel: - Kwaliteitsaspekte van Feta-kaas Vervaardig van Mengsels van Beesmelk en Bokmelk

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Suiwer bokmelk en suiwer beesmelk is ontleed vir mikrobiologiese, fisiese en chemiese kwaliteit. Die melk is gemeng in die proporsies van 100 % beesmelk (behandeling 1), 65 % beesmelk + 35 % bokmelk (behandeling 2), 35 % beesmelk + 65 % bokmelk (behandeling 3) en 100 % bokmelk. Feta-kaas is gemaak van hierdie melk en die eksperiment is drie keer herhaal (altesaam drie lotte).

Fisiese, chemiese en mikrobiologiese ontledings is gedoen op die Feta-kaas op dag 2, 7, 14 en 21 na vervaardiging. Sensoriese evaluering van slegs lot 3 se kaas is gedoen na rypmaking vir 'n periode van 21 dae.

Analise van die Feta-kaas het getoon dat die behandelings beduidend van mekaar verskil het ($p < 0.05$), veral in terme van vetinhoud, totale vastestowwe-inhoud, log totale plaattelling (TPT), tekstuur, pH, proteïeninhoud en vrye vetsuur-inhoud (VVS). Ander kwaliteitsaspekte, naamlik oplosbare proteïeninhoud, NaCl-inhoud en punte vir sensoriese evaluering het nie beduidend ($p > 0.05$) verskil tussen behandelings nie. Die pH, log TPT, oplosbare proteïeninhoud, VVS-inhoud, NaCl-inhoud en tekstuur het beduidend ($p < 0.05$) verander gedurende rypmaking.

Die Feta-kaas gemaak van melk met 'n hoë proporsie bokmelk (behandelings 3 en 4) het hoër mikrobiologiese tellings, VVS-inhoud en oplosbare proteïeninhoud gehad as kase gemaak van melk met hoër proporsies beesmelk. Al het behandelings 2 en 3 omtrent oorvleul wat oplosbare proteïeninhoud betref, het die waardes vir hierdie drie

kwaliteitsaspekte oor die algemeen toegeneem soos die proporsie bokmelk gebruik in die kaasvervaardiging toegeneem het (die neiging was 1<2<3<4). In teenstelling hiermee het die pH-waardes sistematies verlaag van behandeling 1 na 4.

Die gemiddelde vetinhoud van die Feta-kaas het sistematies toegeneem met 'n toename in die proporsie beesmelk, terwyl die gemiddelde totale proteïeninhoud die omgekeerde patroon gevolg het. Die laktose-inhoud van al die kase was onbeduidend vanaf die tweede dag na vervaardiging. Die resultate van tekstuurmetings het beduidend gewissel met tyd en tussen behandelings, maar geen logiese neiging is gevind nie.

Ten spyte van die verskille in samestelling en ander eienskappe, was die aanvaarbaarheid van al die Feta-kase dieselfde en het almal 'n sensoriese evaluering van "hou effens van" gekry.

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