CHAPTER 6 - CONCLUSIONS & RECOMMENDATIONS

It was shown that an EMC could be successfully produced using local curd and equipment. Even with the skewed results from low FAN levels a good EMC flavour in those EMCs made with added lipase was obtained. This flavour should be further improved with further iterations in enzyme concentrations.

The EMCs were contaminated by a pathogen (*Bacillus cereus*) that is innocuous at the levels detected. This contamination must be monitored in any future trials since higher levels than those detected would make the product unfit for human consumption. Perhaps an additional preservative (e.g. Nisin) could also be used that is known for its effectiveness against bacteria.

As expected, FAN only increased where protease was added and the FFA only increased where lipase was added. In absolute terms the FAN results were not consistent with those expected and were about 10 times too low as compared to published values. The low FAN values appear to be due to the enzyme concentration recommended verbally by BioCatalysts being 6 times lower than that recommended by their catalogue. An approximate 50% reduction in the protease activity from the pH not being at the optimum also contributed to the low FAN values. The FFA results were consistent with those recorded in literature. It is recommended that this study be repeated with 10 times higher levels of protease and the same amount of lipase.

The lipase was still active at the end of the incubation so it would be interesting to see whether reducing the enzyme concentrations and increasing the incubation time would get the same end result. Any increase in incubation time would have to be balanced against decreased enzyme stability and increased microbial counts.

Sensory profiling was carried out successfully in this study and produced good results with the inevitable variances caused by differences in personal sensory perception. The use of the standard lexicon from Heisserer & Chambers (1993) for the sensory profiling of cheese reduced the initial work required to set up descriptors and will also allow this work to be compared to that of others. Some of

their descriptors could have been amalgamated for this study since they gave similar sensory results for all EMCs but whether this was due to the low FAN values is unknown.

The low contribution of FAN to the flavour of the EMCs was detected by the flavour wheel and statistically by the principal component analysis since the results for the EMC made exclusively with protease wasn't that different from the control. This confirmed the analytical results, which shows that that certain key indicators such as FFA can be used to predict sensory quality to a limited degree.

The FAN levels were below the flavour threshold during sensory profiling yet the EMCs were still considered cheese like which confirms the findings of some authors that FFA are the major contributor to EMC flavours.

People in developed countries are eating more pre-prepared meals than decades ago, and a trade journal reported that in some countries like the United States, more than half of the under-25 population has never cooked a meal (Convenience Food Systems, 2000). This appears to be a trend that is likely to increase use of EMC in pre-prepared meals, snacks and instant sauces since cheese is a popular flavour which can readily be emulated by EMCs.