

**A STUDY ON STARTER CULTURES USED
IN BUFFALO CURD PRODUCTION BASED
ON MARKET SAMPLES**

By



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**This Thesis submitted in partial fulfillment of the requirements
for the Degree of Masters of Food Science and Technology,
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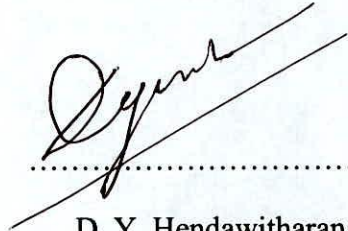
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DECLARATION

“This work described in this thesis was carried out by me under the guidance of Professor (Mrs.) S. C. Wijeyaratne and a report on this has not been submitted in whole or in part to any University or any other institution for another Degree/ Diploma”

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This is to certify that this report is based on the study carried out by the candidate herself and is now approved for submission.



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ABSTRACT

Differences in market choice of curd did not solely depend upon the organoleptic properties of the products available in the market. The consumer relied upon the quality of the product in combination with other beliefs such as the geographical origin of the product. Therefore, this research was aimed at ascertaining that whether the nature of the starter culture used and their microbial presence did have a correlation with the differences of the consumer preference. Accordingly, as far as the nature of the starter culture used in the production of curd based on the market samples available in the Western Province, it was revealed in this research that the pattern of the type of cultures used in the production of curd did not show a marked variance and significant impact on the differences of the consumer preference. For the determination of the microbial presence in relation to the variance of consumer preference, freshly made curd available in Western province selected from three different geographical origins comprising of both types of starter cultures were microscopically and biochemically tested. Accordingly, all 6 samples tested irrespective of their type of culture and geographical origin showed almost a less significant variance in microbial picture with the presence of *Lactococcus lactis*, *Streptococcus thermophilus* and *Lactobacillus spp.* However, two samples consisting of indigenous starter cultures from Southern and North Central Province showed a slight deviation from being devoid of *Leuconostocs* from the rest. Therefore, the prevalence of indiscriminate presence of lactic acid forming microorganisms in majority of tested samples with no discernible specificity to type of starter culture or geographical origin of the product indicates that the difference in consumer preference to curd was not essentially correlated with the variance of lactic acid forming microbial presence.

CHAPTER 1

1. INTRODUCTION

1.1 General Introduction

The practice of usage of 'starter cultures' in the production of curd and other fermented dairy products dates back to a longer history, even prior to the human knowledge in relating to the presence of bacteria was existent (Andreed *et al*, 2000). Although the attributes of the methodology of the conversion of liquid milk into a higher quality curd product were not adequately known in the past, the skill and experience gained through the traditional practices have made the industry of curd production lucrative and demanding to date. (FAO Corporate Documentary Repository). Accordingly, fairly unchanged pattern of production process coming down from past has made the production of curd is yet to remain as predominantly a traditional industry among rural folk with unskilled labour and less technological advances. Nevertheless, it is also seen from recent past that the penetration of the curd market by means of industrialized curd productions in competition to the traditional industry (Sunday Observer, 2011).

In spite of the fact that the industry of production of curd is traditional or industrialized, the production process of 'Curd' needs less manufacturing techniques. The basic form of preparation of curd includes the inoculation of heated milk with starter cultures obtained either from previously made curd or commercially available cultures. These starter cultures are rich in lactic acid forming bacteria that help to coagulate the milk proteins in heated milk (Masud *et al*). As a result of bio- chemical reactions of those microbes, fluid milk is converted in to semi –solid substance named curd.

The increased consumer preference to 'curd' as a highly palatable food product is largely dependent upon its natural composition and least manufacturing techniques employed in the production process (International

Market Bureau , 2009). Accordingly, preservation of the natural qualities of the original raw material (milk) and the comparatively lower shelf – price have been able to attract an increased demand and popularity to curd more than much of the ‘desert table foods’ that are readily available in the market. Furthermore, as far as the consumer preferred physical properties such as specific flavor, texture, consistency and nutritional value of curd are concerned, it is the type of the ‘starter culture’ that plays a vital role in the determination of the aforesaid characteristics (Ahmed *et al*, 2004).

Despite the fact that micro- biological properties of starter cultures determine the quality of curd, the presence of wider organoleptic properties and variable shelf-life of the products available in the market indicate that the producers have less regard over the importance of the type of microbial presentation in the starter cultures used in the curd production. Furthermore, it is unlikely that traditional type of curd producers which still form a substantial part of curd production in the country, have adequate knowledge over the importance of the use of good quality ‘starter cultures’ for higher keeping quality and better consumer preference of curd (Wijewardana *et al*, 2000). On the other hand the type of starter cultures traditionally used by curd producers may have a combination of different lactic acid forming bacteria with no knowledge of their physio-chemical properties which may have negatively affected their market potential. However, the usage of commercially available starter cultures in the production of curd seems to be gradually displacing the indigenous starter cultures mainly used in traditional productions. Furthermore, when considered the newer trend of making deviations of the quality of some of the curd products from traditional form of tastes to different flavor changes, it may also be possible that certain producers may use starter cultures consisting with microbes that are used in other dairy products such as cheese and yoghurt etc (Fernando, 2000).

In the circumstances that consumer preferences to the different curd products available in the market are highly variable and dependent upon the factors such as organoleptic properties and traditional consumer beliefs, it may be of practical importance to identify the nature of the starter cultures used in the curd production whether traditional or commercially available and their microbial pictures in order to determine that whether the variance of the type and the microbial presence do have a significant effect on the market choice. Accordingly, in the circumstances that available researches in relation to the objective of this study area are scarce, this academic research attempts to fill in the gap.

1.2 The Objectives of the Study

- To identify the nature of 'Starter Cultures' (whether indigenous or commercially available) used in the production of curd.
- To identify the microbial picture of 'Starter Cultures' in different brands of curd available in the market.

