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EFFECT OF CINNAMON EXTRACT ON PHYSICOCHEMICAL PROPERTIES OF LOW FAT YOGHURT

BY

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DECLARATION

"The work of thesis was carried out by me under the supervision of Dr.R.A.U.J.Marapana and a report on this has not been submitted in whole or in part of to any University or Institution for another Degree/Diploma".

S. Shampavi

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DECLARATION

I certify that the above statement made by the candidate is true and that thesis is suitable for submission to the University for the purpose of evaluation.

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ABSTRACT

It is recommended that everyone to consume food from animal origin as a part of their diet. Such as milk and milk allied products, meat and egg. But milk and allied products are preferred and consumed by all including vegetarians.

Yoghurt is one of the milk allied product which is a popular desert and it is good source of animal protein minerals and vitamins. A study was carried out to produce a fermented milk product called Yoghurt with the value addition of cinnamon water extract and oil extract. There have been four types of yoghurt were prepared .No.1 – Low fat cinnamon yoghurt (with Skim milk, full cream milk powder and Sugar),No.2 – Low fat cinnamon yoghurt (With Skim milk, sugar and without full cream milk powder),No.3 – Low fat cinnamon yoghurt (With Skim milk, With Full cream milk powder and without sugar), No.4 –Low fat cinnamon yoghurt (with Skim milk and without full cream milk powder and sugar).Sensory analysis was carried out for three different mix of yoghurt and cinnamon extract for each product. The best ratio of selected yoghurt mix and water extract for each type is 65:15, 65:15, 70:10 and 70:10 respectively.

Proximate composition (fat, protein, moisture, total solids and ash) and Physical parameters (pH and Acidity) of the final product was investigated using AOAC procedures. Minerals such as Calcium and phosphorous were analyzed by the method described in By Vogel's Method, 1989

and Asian manuals 2011 respectively .pH and Acidity of all types of yoghurts were determine during the storage period.

The proximate analysis revealed that all the products contain fat between 0.3-0.5%, Protein 3-3.5%, Moisture 76-79% , Ash 0.7-0.72% , Total solid 20-23% , Calcium 13-18mg/100g and Phosphorous 169-324mg/100g. pH of the cinnamon yoghurts were 4.94-4.22 and the titrable acidity was 0.63-0.98.

CHAPTER 01

INTRODUCTION

Yoghurt which is one of the popular fermented foods and it has medicinal and nutritional properties. It is a coagulated milk product obtained by lactic acid fermentation through the action of *Lactobacillus bulgaricus* and *Streptococcus thermophilus* which are the lactic acid bacteria. The preferable and important features at better storage that of fresh milk and in the presence of active culture, better digestibility and new tasks sensations. According to the studies on yoghurt the lactic acid fermentation has been reducing the risk of having pathogenic microorganisms those are gross there.

There are main two types of yoghurt which are based on method of production. They are set yoghurt and stirred yoghurt respectively. The set yoghurt is divided into three types; they are Normal yoghurt, Low fat yoghurt, and nonfat yoghurt. Stirred yoghurt would be plain, Fruit or flavored yoghurts.Sri Lankans prefer yoghurt than other natives of various countries. Yoghurt is consumed by most of the Sri Lankans without any age category of people and it is the highest consumption.

There are so many attempt and researches are carried out to use herbal additives in order to promote taste and medicinal values to improve the health of the consumers. In this research cinnamon water extract and Cinnamon oil extract are taken as additive to give a good aroma, taste and increase the medicinal values.

Cinnamon belongs to Lauraceae family. There are more than hundred varieties are existing now. But Ceylon cinnamon (*Cinnamonum Zeylanicum*) and the Chinese

cinnamon (*Cinnamonum aromaticum*) are the loading varieties those are consumed as spice. Cinnamon is in use since 2700BC.Cinnamon can grow all types of soils. But it grows mainly in Matara and Galle districts of Sri Lanka.

The Ceylon Cinnamon (*Cinnamonum Zeylanicum*) is the genus which is indigenous to Sri Lanka.Sri Lanka gained its name for cinnamon and other spices from the historical times. Ceylon cinnamon and China cinnamon have the specific aroma, taste and sweet. The Ceylon cinnamon is more refined and comparatively rear in European markets than the Chinese cinnamon. The coumarin a toxic compound which is found about 15% in Chinese cinnamon and trace amount is found in Ceylon cinnamon.

Cinnamon contains many nutritive substances such as polyphenols, dietary fiber, Manganese (Mn), Calcium (Ca), Copper (cu) Zinc (Zn). In addition to these, it contains cinnamic acid, cinnamaldehyde and tannin.

The polyphenols the anti-oxidants which boost the levels of three key proteins. There are playing important role in insulin signaling Glucose transport (blood sugar) and inflammatory response. The proanthocyanidin a type of phenol which activates insulin receptors. These chemicals help to lower the blood sugar level as much at 30% (Khan et. al.2003).

The anti-inflammatory compound is present in cinnamon it relieves arthritis, helping to prevent urinary infections to the decay and gum diseases. In addition to these it acts as strong anti-microbial substance and it can kill bacteria especially *E.coli.*

As the cinnamon has distinct aroma, flavor, spicy and sweet properties, it may have uses in food beverage, sweet and confectionery industries. It is used as flavoring agent in soft