



Quality characteristics of set yoghurt blended with Tender Coconut Water – Milk - Carrageenan

G.Swarnalatha

Assistant professor, College Of Dairy Technology
Sri Venkateswara Veterinary University
Tirupati



OUTLINES

- Introduction and Objectives

- Materials and Methods

- Results

- Conclusion

Introduction



- ✦ Yoghurt is a fermented milk product with a custard- like consistency which differentiates from other fermented milk products.
- ✦ It is characterized as a smooth, viscous, gel with specific taste of sharp acid and green apple flavor.
- ✦ The most important textural characteristics of yoghurt are firmness and the ability to retain water.

- Contd....

Tender Coconut Water (TCW)

- ✦ Healing property
- ✦ Good for feeding infants
- ✦ Reduction in body weight
- ✦ Effective in the treatment of kidney
- ✦ Cures malnourishment
- ✦ Several nutritional advantages over milk



- Contd....



Stabilizer – Carrageenan

Two basic functions

- The binding of water and
- Improvement in texture.

The product provides a number of benefits

- Including additional quick setting
- Good demolding
- Low syneresis
- Increased heat stability and
- An extended shelf life.

- Contd....



Objectives:

- Optimization of different levels of Carrageenan, tender coconut water – milk blends for the preparation of set yoghurt.
- Evaluation of the physico –chemical characteristics of the set yoghurt prepared by using TCW – milk blends.
- Evaluation of the sensory and textural characteristics of the set yoghurt prepared by using TCW – milk blends.
- To study the storage stability of set yoghurt prepared by using TCW – milk blends.

- Contd....

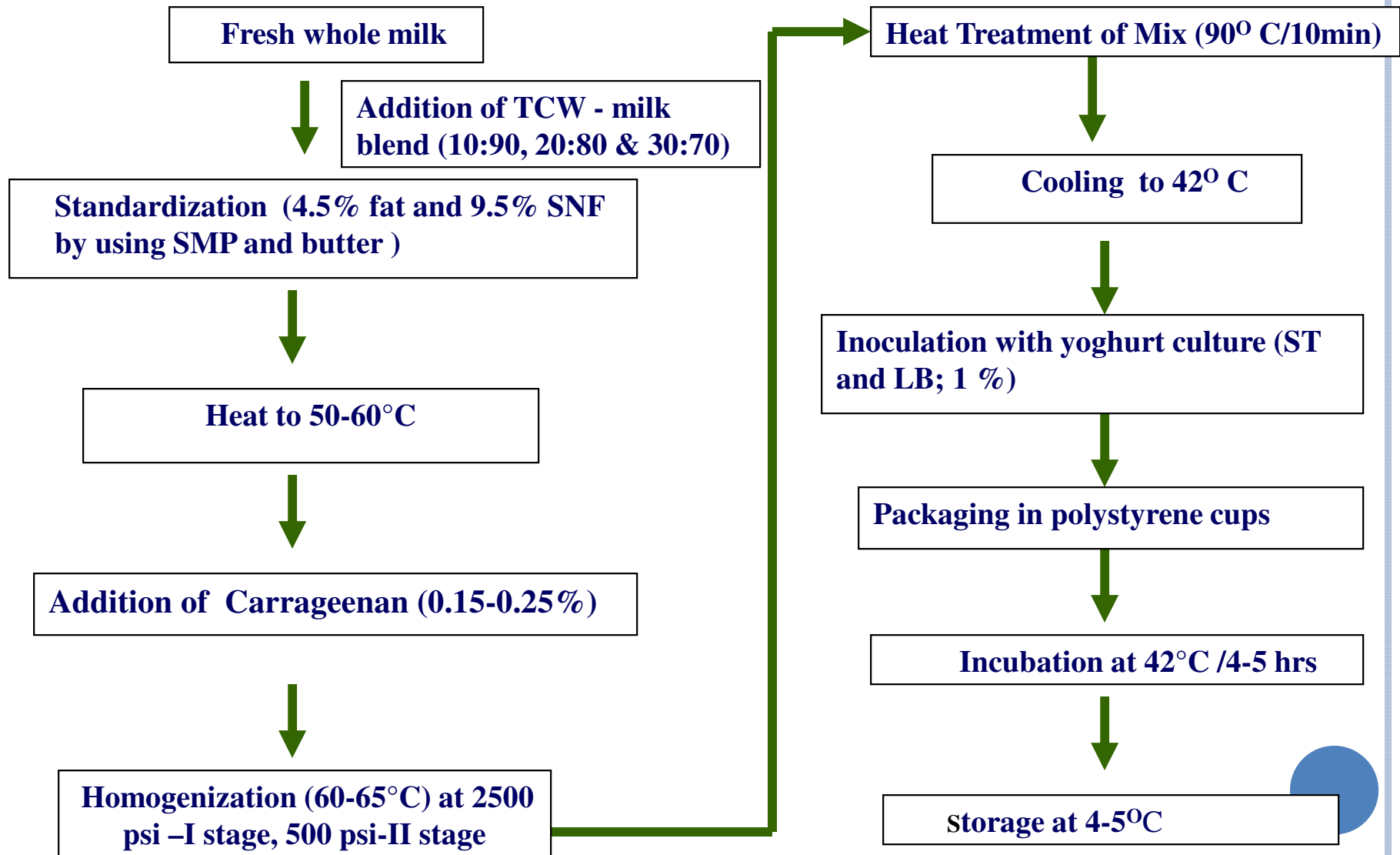


Materials and Methods



- Fresh cow milk
- Tender coconut water (TCW)
- k –Carrageenan
- *Streptococcus thermophilus* (ST) and *Lactobacillus bulgaricus* (LB) (1:1)
- Nandini butter and Nestle milk powder
- 50 ml polystyrene cups.

1. Optimization of set yoghurt blended with TCW – milk by using different levels of Carrageenan .





2. Physico chemical analysis of set yoghurt

- ➔ **Curd strength**
- ➔ **Curd setting time**
- ➔ **Syneresis**
- ➔ **Titratable acidity**

- Contd....

3. Sensory evaluation of set yoghurt

Yoghurt samples were given to a panel of five judges for sensory evaluation. Each judge was supplied with standard score card of a total of 100 points for firmness, whey separation, body & texture, flavour.



- Contd....



Sensory Score card of Yoghurt



Sample code	Characteristics					Remarks
	Firmness (30)	Body and Texture (20)	Whey separation (10)	Flavour (40)	Total (100)	
Perfect score →						



4.Storage stability of set yoghurt

- ✓ The samples were stored at room and refrigeration temperature .
- ✓ Viability of *Streptococcus thermophilus* and *Lactobacillus bulgaricus*,
- ✓ Soluble nitrogen, and
- ✓ Titratable acidity.

- Contd....



RESULTS

1. Optimization of different levels of Carrageenan, TCW – Milk blends

Stabilizers	Level of culture	Control	Tender coconut water: Milk blends								
			10:90			20:80			30:70		
			Carrageenan (g %)								
			0.05	0.15	0.25	0.05	0.15	0.25	0.05	0.15	0.25
Carrageenan	1%	+++	++++	+++	++	++	++	+	++	+	-

++++: Very firm curd
+++ : Firm curd

++: Slightly Firm curd
+ : Weak curd

- : Very weak curd

Carrageenan at higher levels decreased the firmness which may be due to

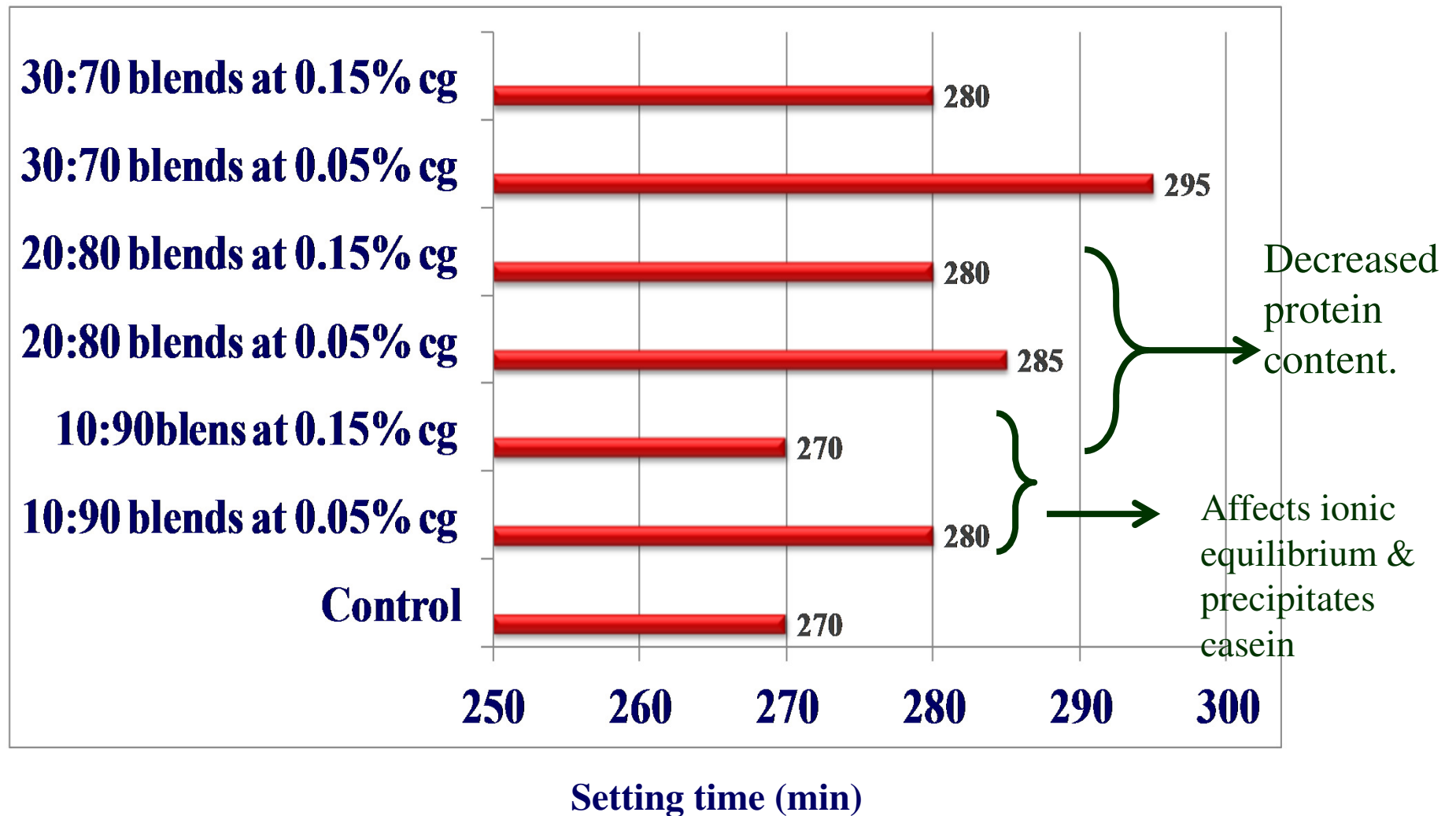
- Higher levels of minerals
- Presence of 3,6 anhydrogalactose units
- Low content of sulfate and
- Hydrophobic nature

- Contd....

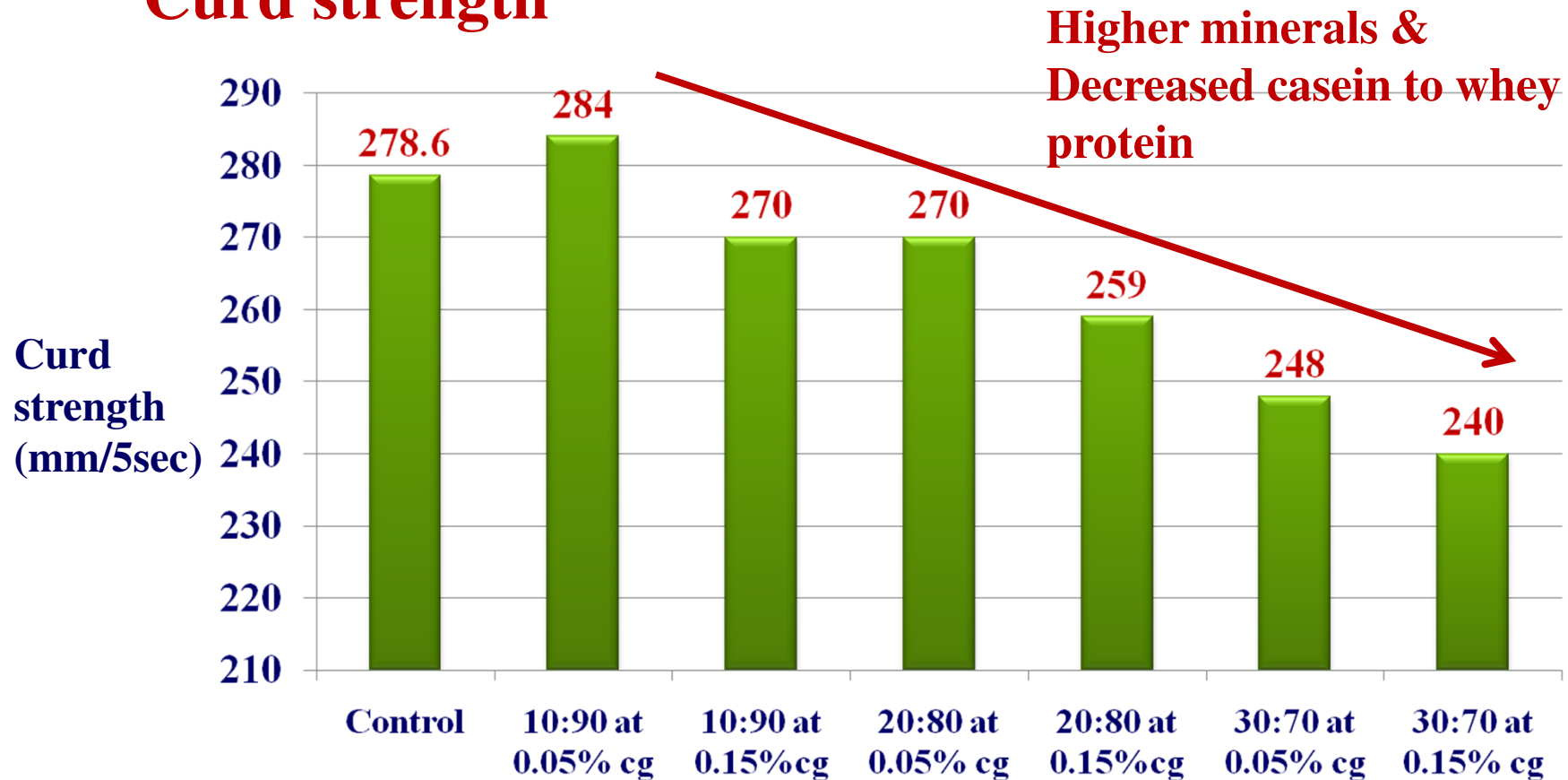


2. Effect of Carrageenan on Physicochemical characteristics of the set yoghurt prepared with TCW – milk blends

Setting time



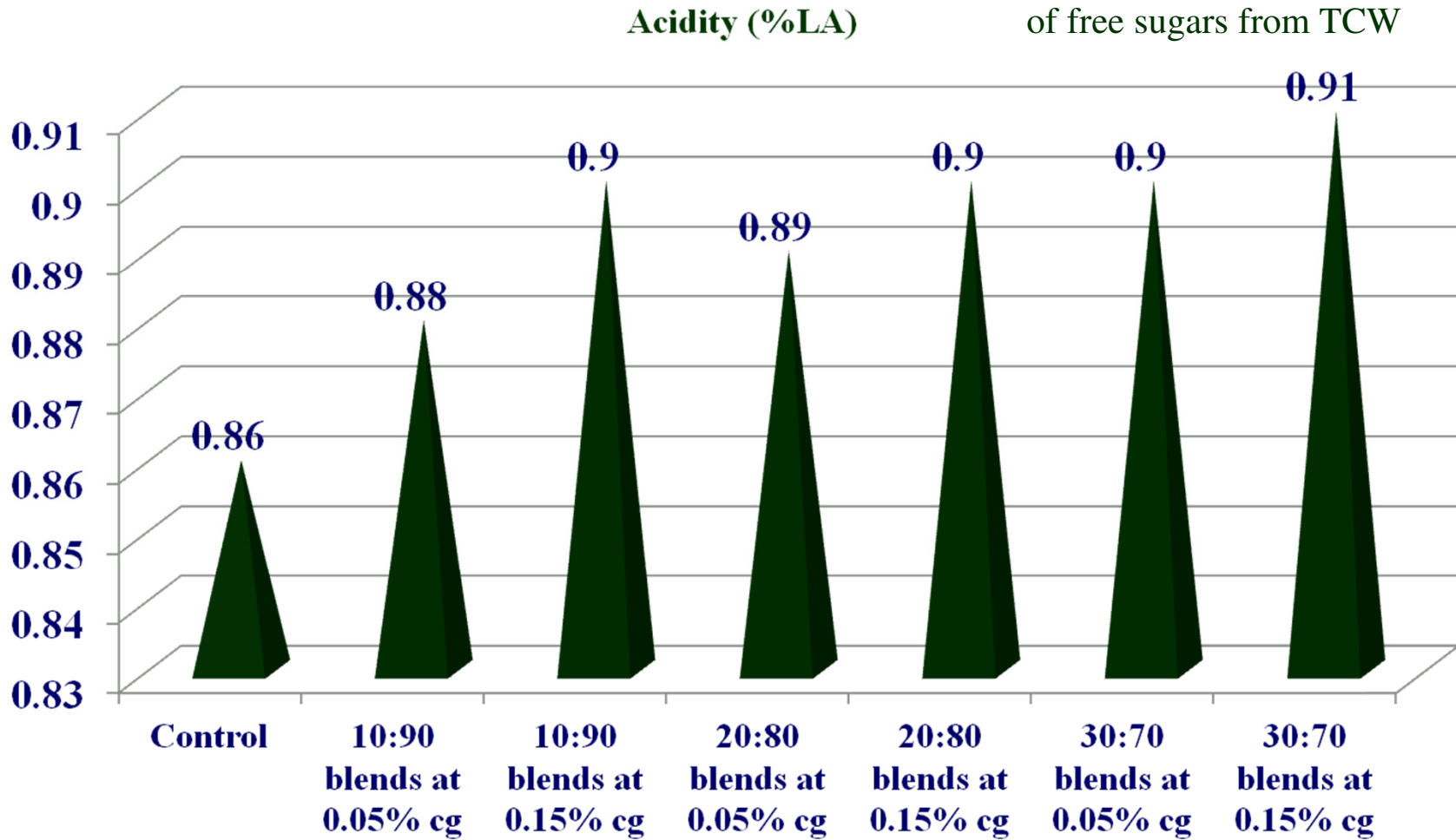
Curd strength



Carrageenan is an anionic hydrocolloid capable of interacting with casein micelles, strengthens the protein network and improves the firmness of yoghurt.

Acidity

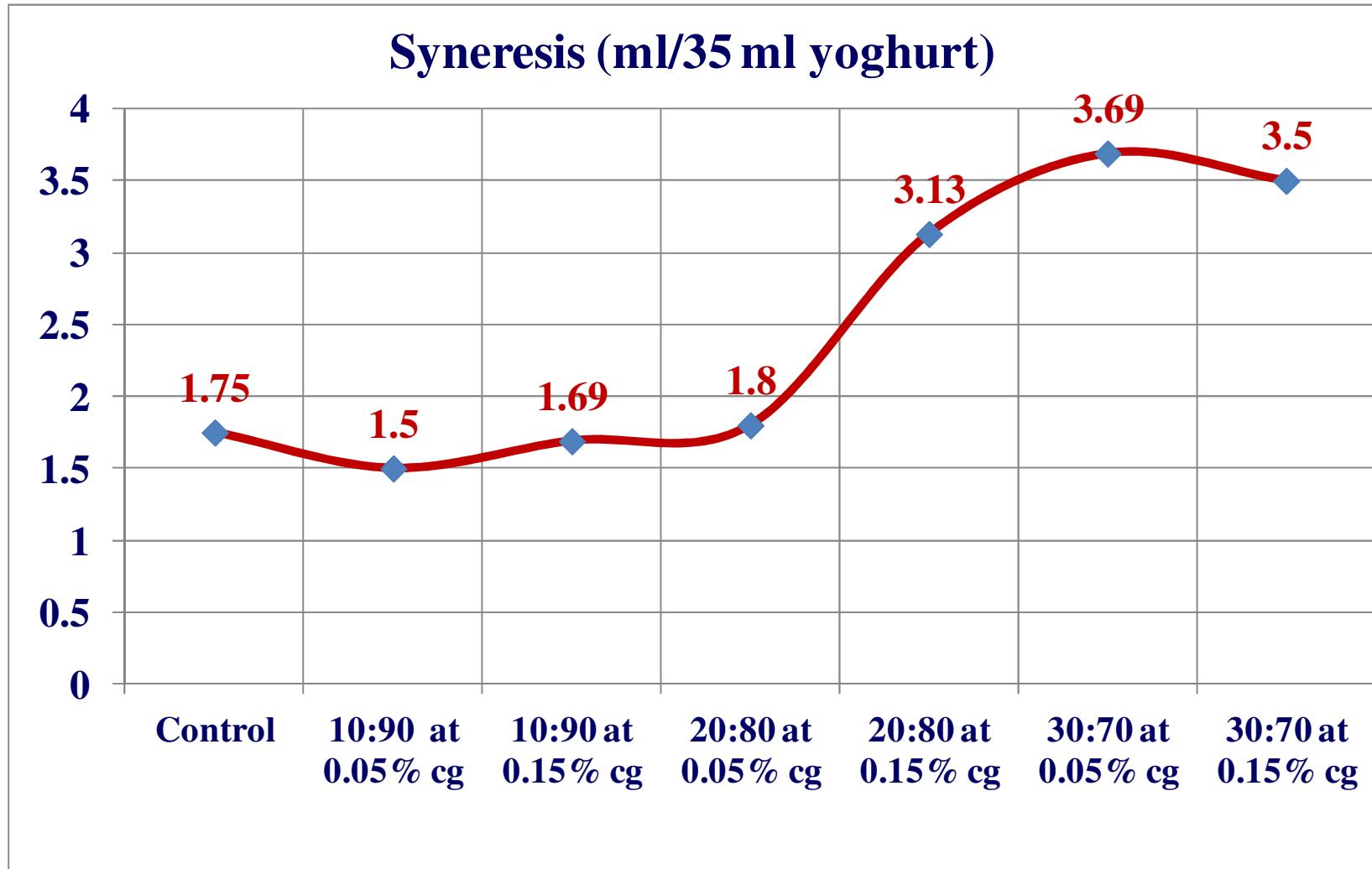
Availability of concentrations of free sugars from TCW



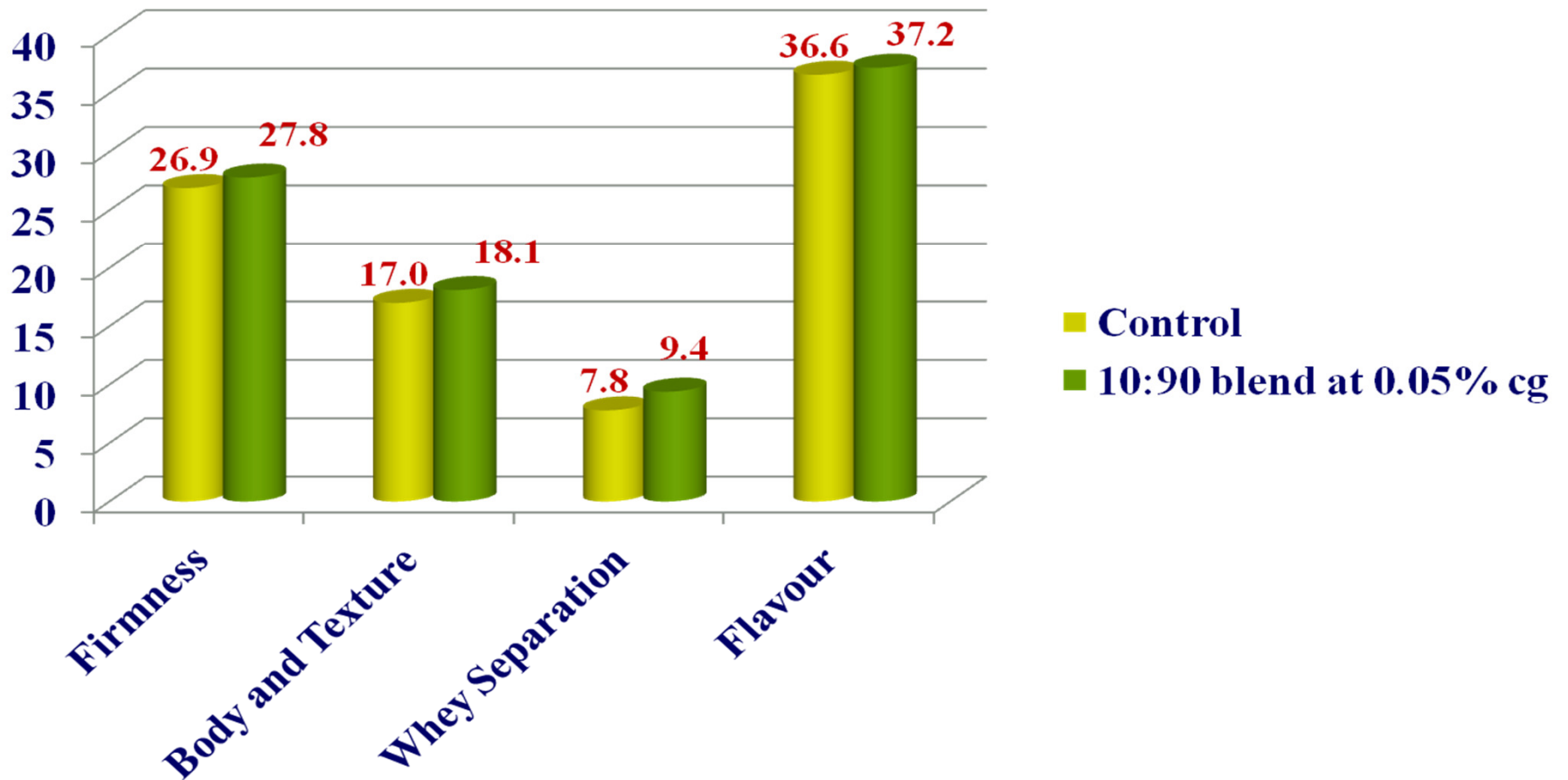


Syneresis

•Carrageenan at higher level caused casein destabilization and wheying off in milk.



3. Effect of Carrageenan on sensory characteristics of set yoghurt prepared with TCW –milk blends.





4. Effect of carrageenan on storage stability of set yoghurt prepared with TCW –Milk blends

- At room ($30\pm 1^\circ\text{C}$) & refrigerated temperature ($5 \pm 2^\circ\text{C}$)

- Contd....



1. Viability of ST & LB

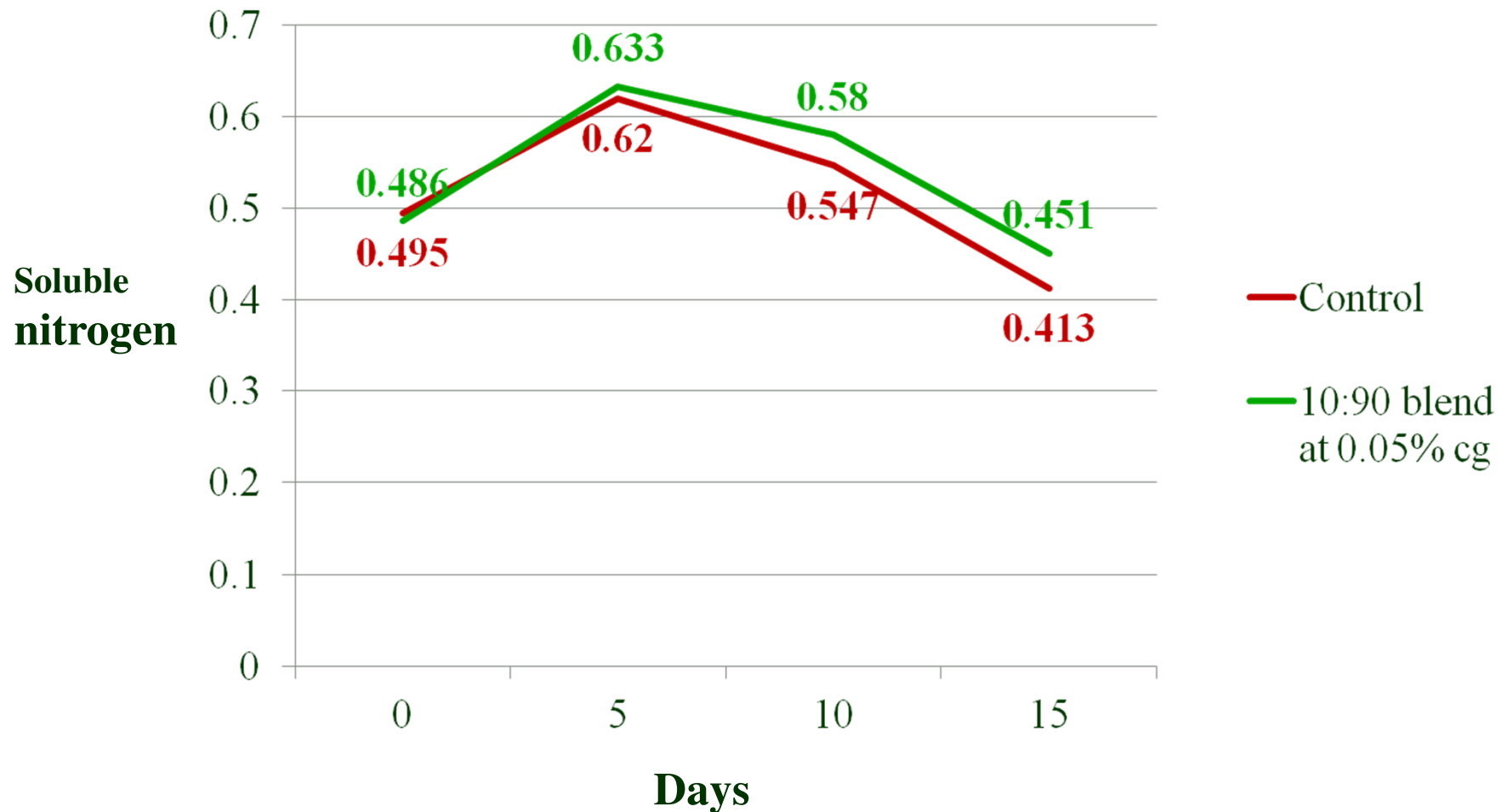
- The initial viable counts for ST and LB was $\geq 10^7$ cfu/g
- Reached to 10^2 cfu/gm after 3days of storage at room temperature
- Reached to 10^5 cfu/gm after 15 days of storage at refrigerated temperature

- Contd....



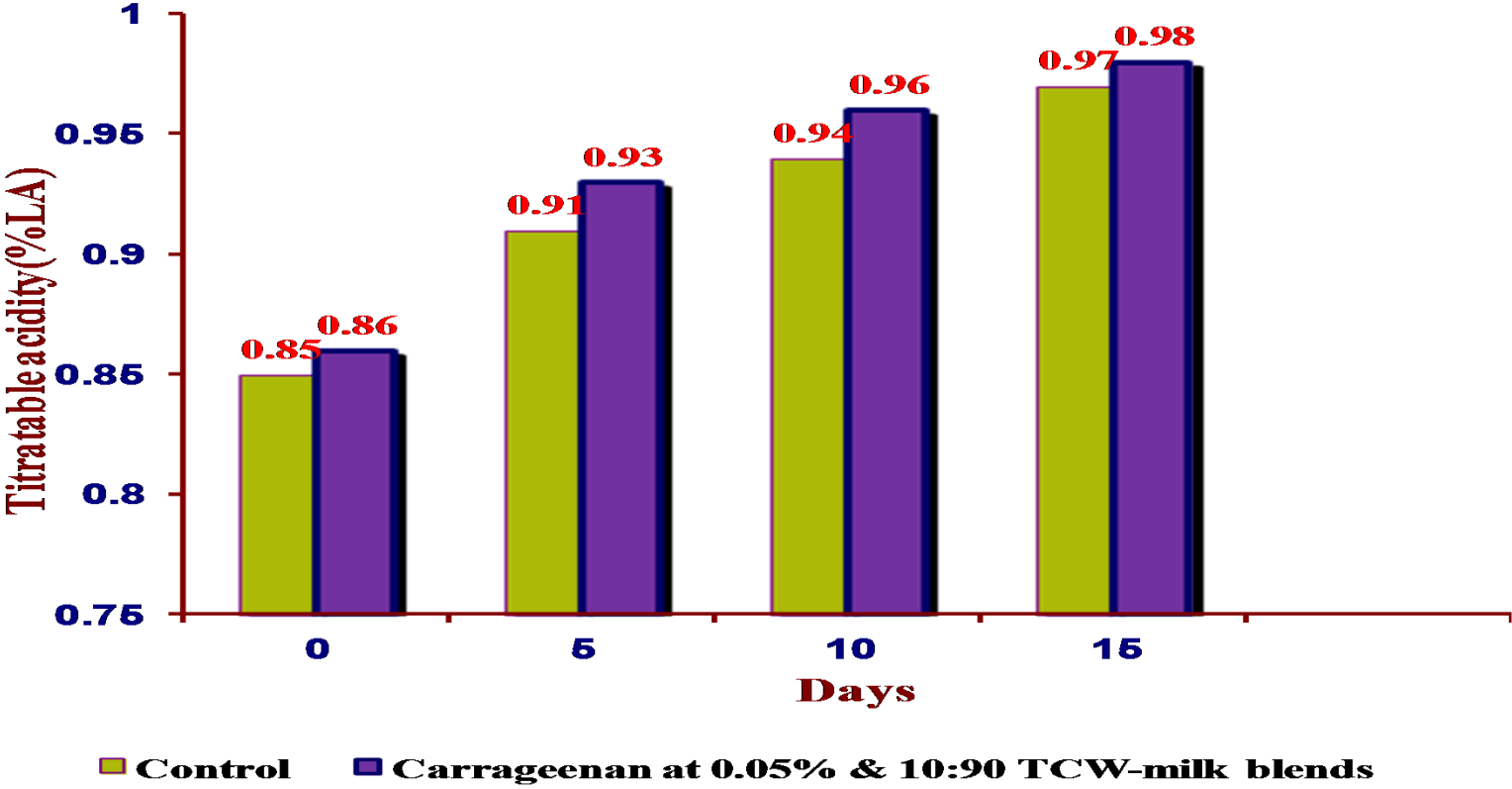
2. Soluble nitrogen

Due to increase in the lactic acid which inhibited the proteolytic activity of the viable bacteria.





3. Titratable acidity



- Contd....



Conclusion

- As tender coconut, water has its own healing and therapeutic properties it's blending with the milk in the development of yoghurt in the presence of carrageenan will have a better nutritive value.
- The yoghurt incorporated with tender coconut water and carrageenan may be useful to alleviate intestinal disturbances, malnourishments, to reduce obesity, for oral rehydration in the instances like diarrhea, maintenance of acid –base balance and to reduce risk of cancer.
- It is concluded that Carrageenan may be used at 0.05% in 10:90 TCW-milk blends to prepare nutritionally superior yoghurt.





Thank You

