Sally Samir Sakr, PhD Holder

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CAREER HISTORY

Dairy Science Department – Fac. Agric., Cairo Univ. **March/2011 - Present**
Lecturer

Dairy Science Department – Fac. Agric., Cairo University **October/2006- March/2011**
Assistant lecturer

Dairy Science Department – Fac. Agric., Cairo University. **January/2001- October/2006**
Demonstrator

EDUCATION

PhD, Dairy Science – Fac. Agric., Cairo University **2007 - 2011**
"The Physicochemical, Immunological and Technological Changes of Milk Induced by Microbial Transglutaminase"

MSc, Dairy Science – Fac. Agric., Cairo University **2001 - 2006**
"Changes in Milk Protein Induced by Some Chemical and Physical TREATMENTS AND THEIR INFLUENCE ON PROTEIN FUNCTIONALITY"

B.Sc., Dairy Science – Fac. Agric., Cairo University **1999**
Last year degree, excellent (accumulated, very good with owner degree)

PUBLICATIONS (last five years)

1. Sakr, S. S., and S. A. A. Dawood, 2015. Hypocholesterolemic effect of pomegranate's peel (water extract) supplemented yoghurt in hypercholesterolemic rats, *Indian J. Dairy Sci*, vol. 68, pp. 1.
2. Abd-Rabo F.H.R., El-Dieb, S.M., Abd-EL-Fattah A.M. and **Sakr S.S**., 2013. Reduction of milk proteins Allergenicity in Balb/c mice. EUROFOODCHEM XVII, Istanbul, Turkey, May 7-10th.
3. Abd-Rabo F.H.R., El-Dieb, S.M., Abd-EL-Fattah A.M. and Sakr S.S., 2013.Characteristics of set-style yoghurt manufactured from Transglutaminase treated milk. EUROFOODCHEM XVII, Istanbul, Turkey, May 7-10th.
4. Reduction of milk proteins allergenicity, 2012. Lambert Academic Publishing GmbH & Co. KG.
5. Abd-Rabo F.H.R., El-Dieb, S.M., Abd-EL-Fattah A.M. and **Sakr S.S**., 2010. Natural state changes of Buffaloes and Cows milk proteins induced by Microbial transglutaminase. Journal of American Science, 6: 612-620.
6. Abd-Rabo F.H.R., El-Dieb, S.M., El-Asser M.A. and **Sakr S.S**., 2010. Effect of some physical treatments and additives on some functional properties of Buffaloes and Cows casein micelles. Egyptian journal of dairy science, 38: 35-44.

7. Abd-Rabo F.H.R., El-Dieb, S.M., El-Asser M.A. and **Sakr S.S**., 2010. Effect of some physical treatments and additives on the electrophoretic pattern and microstructure of casein micelles. Egyptian journal of dairy science, 38: 45-52.
8. Abd-Rabo F.H.R., El-Dieb, S.M., El-Asser M.A. and **Sakr S.S**., 2009. Effect of some heat treatments on the milk nitrogen distribution and casein micellar size. Proceeding of the 4th Conference, Recent technology in Agriculture" Challenge of Agriculture Moderenization", November 3 -5, Giza, Egypt.

References Available on Request

APPENDIX I

- **PhD Abstract**

Abstract

In this study the natural state changes of Cows' and Buffaloes' milk proteins induced by Microbial Transglutaminase (MTGase), The reduction of milk proteins allergenicity caused by utilization of modified skim Cows' and Buffaloes' milk and the chemical, physical and sensory characteristics of set-style yoghurt manufactured from less allergic modified skim and whole Cows' milk were followed. The obtained results revealed that the treatment of milk by MTGase led to:

- completely incorporation of Glutamine and Arginine in skim Cows' milk, while Glysine and Valine were in skim Buffaloes' milk.
- reduction in levels of monomeric caseins.
- significant increase in the level of hydration of the cross-linking protein polymer, viscosity and a decrease in the level of sedimentable solids.
- the allergic changes in small intestine of orally sensitized Balb/c mice groups were less than the native milk sensitized groups.
- the intestine villi of orally sensitized mice appeared long and fine, the crypt/villi ratio was intact, less edema and architectonic disarray.
- serum Immunoglobulin E (IgE), Immunoglobulin G (IgG) and plasma histamine levels were lowered.
- the addition of MTGase to yoghurt milk had no effect on the fermentation time of yoghurt.
- yoghurt made from MTGase milk had less syneresis, high capacity for holding water and a greater viscosity than control.
- yoghurt made from MTGase treated skim Cows' milk had lower level of acetaldehyde than control.
- the results of sensory analysis showed that, it was possible to reduce the fat content and the obtained yoghurt was similar in texture to the full-fat yoghurt.
- yoghurt made from skim or whole milk pre-incubated with MTGase had the highest total score between treatments.

Key words: Cows' milk, Buffaloes' milk, Transglutaminase, allergy, yoghurt

- **Prize: Unilever - MashreqScience society for food industry with the cooperation of Unilever - Mashreq 3/2012**

- **Last poster (08/05/2013)**

Reduction of Milk Proteins Allergenicity by Microbial Transglutaminase in Balb/c Mice

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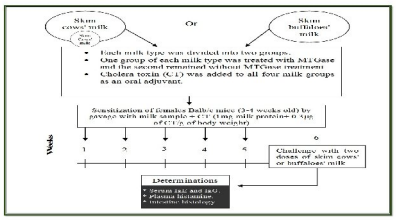
Introduction

Modified cows milk preparations are the most used substitutes from human milk. However, many nutritional problems were reported from its use for infant feeding due to cows milk allergy (CMA). The cross-linking by Microbial Transglutminase seems to be a more advantageous solution which can be reported to prepare milk protein as a base for hypoallergenic formula.

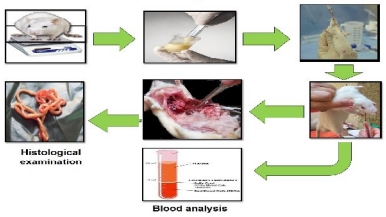
Aims of study

Reduction of cows and buffaloes milk proteins through Microbial Transglutaminase utilization.

Experimental Design



Analysis



Results

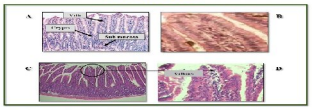


Figure 1. A longitudinal section of normal mice intestine Duodenum wall. Left, Intestinal wall (A, Li et al17; C, our study). Right, Villi (B, Hanane et al19; D, our study).

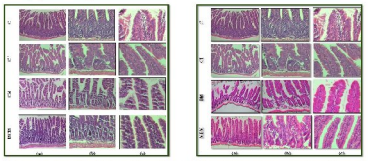


Figure 2. A longitudinal section of Duodenal wall, a; sub mucosa, b; villi, c of cow and buffalo milk sensitized mice groups. C, Sham sensitized group; CT, cholera toxin group; CM, cow milk group; BM. , buffalo milk group; MCM, cow modified milk group; MBM, buffalo modified milk group

Table 1. Measurements of serum total IgE, IgG and plasma histamine (ng/ml) in different mice groups.

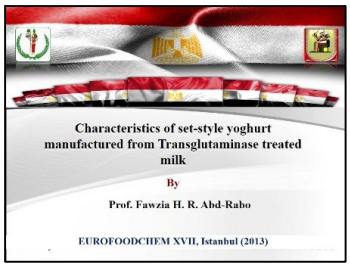
Treatments	Total serum IgE	Total serum IgG	Plasma histamine
C	34.3^{e}	388.3^{e}	3.0^{e}
CT	118.0^{c}	662.0^{a}	32.0^{a}
CM	131.2^{a}	618.0^{b}	30.4^{b}
MCM	101.2^{d}	361.0^{f}	24.7^{d}
BM	122.4^{b}	598.0^{c}	27.4^{c}
MBM	101.2^{d}	460.3^{d}	27.0^{c}

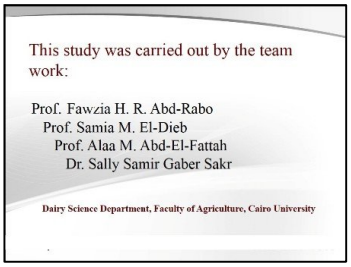
Means in the same column with different superscripts differed significantly at level 0.05 of probability.

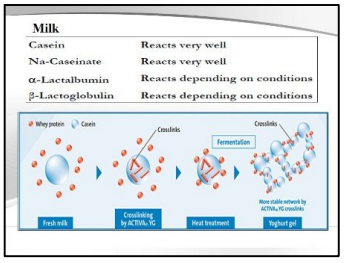
Selected references

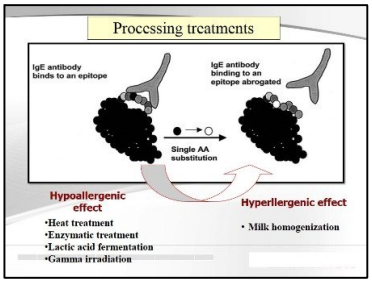
- Hanane N, Hanane K, Omar K, Djamel S. A model of intestinal anaphylaxis in whey sensitized Balb/c mice. Am J immu 2009; 5 (2): 56-60
- Lara-Villoslada F, Olivares M, Xaus J. The balance between caseins and whey proteins in cow's milk determines its allergenicity. J Dairy Sci 2005; (88): 1654-1660.
- Wróblewska B, Kolakwski P, Troszyńska A, Kaliszewska A. Influence of the addition of transglutaminase on the immunoreactivity of milk proteins and sensory quality of kefir. Food Hydrocolloids 2009; 23(8):2434-2445.

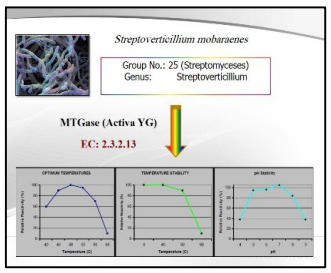
- **Last oral presentation (09/05/2013)**

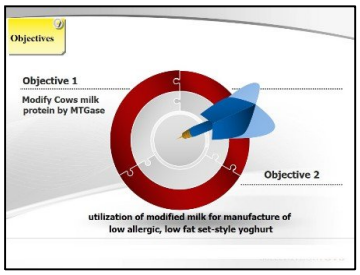


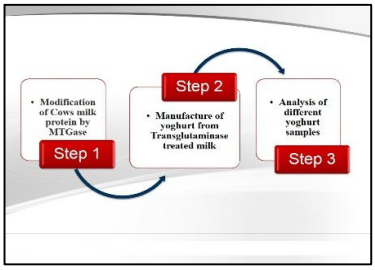


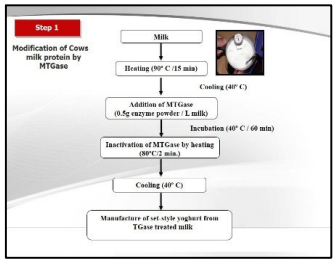


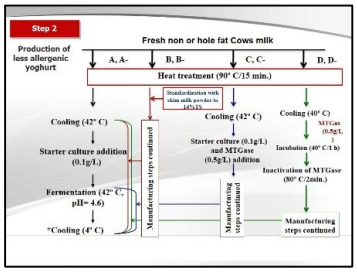


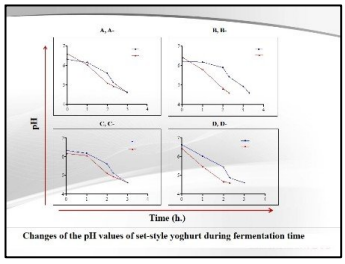


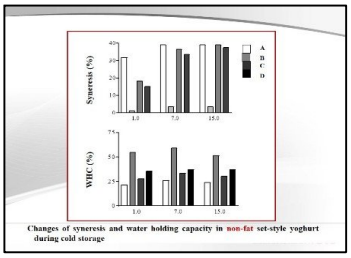


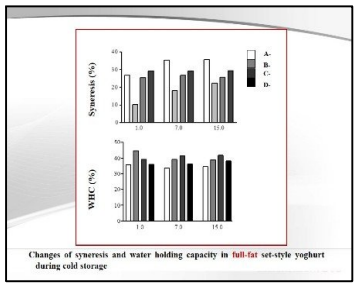


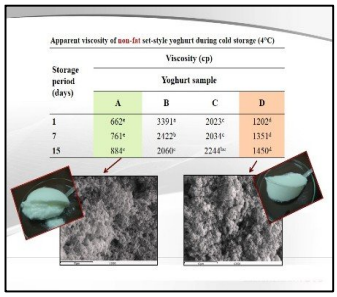


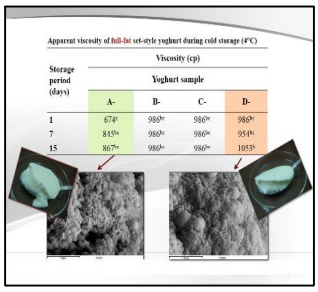


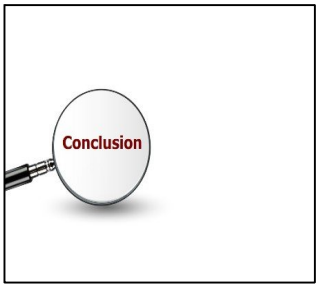












- the addition of MTGase to yoghurt milk had no effect on the fermentation time of yoghurt.
- yoghurt made from MTGase milk had less syneresis, high capacity for holding water and a greater viscosity than control.
- the results of sensory analysis showed that, it was possible to reduce the fat content and the obtained yoghurt was similar in texture to the full-fat yoghurt. yoghurt made from skim or whole milk pre-incubated with MTGase had the highest total score between treatments.

Costs of 100Kg non-fat set-style yoghurt production

Parameters	Ingredients price (Egyptian pounds)	Total costs
	Non-fat yoghurt	
A	SCM (300) + S (24)	324
B	SCM (300) + S (24) + SMP (4)	328
C	SCM (300) + S (24) + MTGase (40)	364
D	SCM (300) + S (24) + MTGase (40)	364

A: Non fat yoghurt without MTGase
B: Non-fat yoghurt fortified with skim milk powder
C: Non fat yoghurt with no pre incubation 0.5g L^{-1} MTGase
D: Non-fat yoghurt with pre incubation 0.5g L^{-1} MTGase
SCM: Skim Cows milk
S: Starter culture
SMP: Skim milk powder

Costs increased by:

(364-328)/328x100% = 10%