PRESENT STATUS OF SOME VITAMINS IN EGYPTIAN DAIRY PRODUCTS

By

SAMAH MOSBAH MOHAMED EL-SAYED

B.Sc. Agric. Sc. (Dairy Science and Technology), Ain Shams University, ٢٠٠١

M.Sc. Agric. Sc. (Dairy Science and Technology), Ain Shams University, ٢٠٠٧

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This thesis for Ph.D. degree has been approved by:

Dr. Samir Okasha Ahmed Shalabi ……..

Prof. Emeritus of Dairy Science and Technology, Faculty of Agriculture, Al-Azhar University.

Dr. Lotfy Fahmy Hamzawi ……

Prof. Emeritus of Dairy Science and Technology, Faculty of Agriculture, Ain Shams University

Dr. Abd-El-Moniem El-Badawy Hagrass ……

Prof. Emeritus of Dairy Science and Technology, Faculty of Agriculture, Ain Shams University

Dr. Abd El- Hamed Abou El-Hassan Askar ……

Prof. Emeritus of Dairy Science and Technology, Faculty of Agriculture, Ain Shams University

Date of Examination: ٧ / ٤ / ٢٠١٣

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Under the supervision of:

Dr. Abd El- Hamed Abou El-Hassan Asker

Prof. Emeritus of Dairy Science and Technology, Department of Food Science, Faculty of Agriculture, Ain Shams University (principle Supervisor)

Dr. Abd El-moniem El-Badawy Hagrass

Prof. Emeritus of Dairy Science and Technology, Department of Food Science, Faculty of Agriculture, Ain Shams University

Dr. Mohamed El-Hussiny Abd El-Salam

Researcher Prof. Emeritus of Dairy Science and Technology, National Research Center, Egypt.

ABESTRACT

Samah Mosbah Mohamed El- Sayed, Present status of some Vitamins in Egyptian Dairy Products, Unpublished Ph. D. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, ٢٠١٣.

Milk and dairy products contain several vitamins that contribute to nutritive values. The levels of vitamins in milk products are affected by several environmental factors and processing conditions. The aim of the present study was to explore the status of vitamins of some milk products in the local market.

Two HPLC methods have been developed. The first was for simultaneous determination of retinol, β-carotene and α-tocopheroland the second for the determination of thiamin ($B_١$), riboflavin ($B_٢$) and pyridoxine ($B_٦$).

Market samples of whole fat UHT milk, milk powder and processed, Ras, soft cheeses and buffalo milk butter were all characterized by low β-carotene and α-tocopherol, and cheeses contained less retinol (on fat basis) than the other products.

Also, market samples of whole and skim UHT milks, yoghurt, whole milk powder, processed and soft cheeses were analyzed for $B_١$, $B_٢$ and $B_٦$vitamins, all UHT samples contained less riboflavin than other products analyzed and B٦ was not detected in UHT milks.

Skim UHT storage at low and room temperatures, revealed significant losses in $B_١$ and $B_٦$ disappeared after two months of storage and losses in these two vitamins were nearly the same in whole and skim UHT milks, and that losses were slightly higher at room temperature. Riboflavin showed good storage stability in both UHT milks.

Yoghurt was made using probiotic *Bifidobacterium bifidum, Lacto bacillus plantarum* or their mixture as adjunct starters. The use of these cultures enhanced the contents of B_1, B_2 and B_6, but measurable decreases occurred in B_1 and B_6 vitamins during cold storage, while the riboflavin content increased. At the end of storage period, yoghurt made with the use of the adjunct starter had higher B_1, B_2 and B_6 than the control. The added adjunct cultures had no adverse effect on the composition or organoleptic properties of yoghurt.

Keywords: Thiamin, riboflavin, pyridoxine, HPLC, dairy products, yoghurt, retinol, β-carotene, α-tocopherol, organoleptic properties.

CONTENTS

LIST OF TABLE

LIST OF FIGURES

LIST OF ABBREVIATIONS

HPLC	High performance liquid chromatography
µg	Micro gram
*µ*m	Micro meter
ɒ-FmTHF	ɒ-formyltetrahydrofolate
ɒ-MeTHF	ɒ-methyltetrahydrofolate
B. longum	*Bifidobacteriumlongum*
cfu	Colony forming units
ECM	Energy-corrected milk
GLM	General Linear Model
HDPE	High density polyethylene
IU	Internationalunit
KG	Kefir grains
KOH	Potassium hydroxide
L. bulgaricus	*Lactobacillusbulgaricus*
LAB	Lactic acid bacteria
LDL	Low density lipoprotein
LOD	Limit of detection
LOQ	Limit of quantification
mg	Milli gram
mL	Milli liter
ng	Nano gram
PAB	Propionic acid bacteria
PC	Polycarbonate
PE	Polyethylene
PET	Polyethylene terphathalete
PUFA	Poly unsaturated fatty acids
RDA	Recommended Dietary Allowance
RSD	Relative standard deviation
S. thermophilus	*Streptococcus thermophiles*

SE	Standard error
TCA	Trichloro acetic acid
TFA	Trifloro acetic acid
THF	Tetrahydrofolate
TiO_2	Titanium dioxide
TS	Total solid
UHT	Ultra-high temperature
UV	Ultra-violate