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Effect of fermented mixture of soymilk and whey protein with some probiotics strains on the diabetic rats

THESIS
Submitted to faculty of specific education, Ain- shams Univ. in Partial fulfillment of the requirement for doctor degree in nutrition and food science

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2020

Abstract

The Effect of different milk types and its yoghurt by various types of bacterial Culture on rats induced to diabetes.

Diabetes is a global health problem in the world. Probiotic therapies are going to be an effective alternative therapeutic strategy in the treatment and management of diabetes. The objective of this study was to evaluate the effect of different milk types, conventional yoghurt and probiotic yoghurt from *Bifidobacterium* on serum blood glucose and lipid profile for rats induced to diabetes. In this study, two strains of conventional yogurt, by *Lactobacillus bulgaricus* and *Streptococcus salivarius* and in combination with either probiotics bacteria *Bifidobacterium infantis* and *Bifidobacterium longum* for the production of fermented soymilk and cow milk for feeding 96 male albino rats induced with STZ. Results revealed that fermented soymilk by *Bifidobacterium* was able to significantly decrease glucose levels, total cholesterol concentrations and triacylglycerols compared to conventional yogurt types and milk types. In conclusion soy-protein consumption reduces serum blood glucose and lipid profile for rats induced to diabetes.

Key Words: Soymilk, Cow milk, Whey protein, yogurt, serum blood glucose, lipid profile.

Acknowledgement

First and above all, my deepest gratitude and thanks to all Allah for achieving any work in my life.

I wish to express my great appreciation to **Prof. Dr. Usama El-Sayed Mostafa**, Professor of Nutrition and Food Science, Dean for Faculty of Specific Education, Faculty of Specific Education, Ain Shams University. For this investigation suggestion, direct supervision, greatest faithful, constructive criticism as well as valuable discussion, great help for all work and plentiful active for me to bring this investigation to its best shape.

Greatful thanks to **Prof. Dr. Yasser Mahmoud Ibrahim Alawi,** Professor of Food Science and Nutrition, Faculty of Specific Education, Ain Shams University for careful guidance, willing cooperation and encouragement throughout the work.

My thanks to **Assistant Prof. Dr. Ereny Wilson Nagib,** Assistant Professor of Nutrition and Food Science of Nutrition and Food Science (Special Education), Faculty of specific Education, Ain Shams University for her helps throughout the work.

I would like to express my deepest gratitude and respect to **Prof. Dr. Magdy Attia Mohamed**, Professor of microbiology, Agricultural Microbiology Department, National Research Centre Who devoted his time, effort, scientific advice, endless help and experience to achieve this work.

Many thanks are also extended to **Prof. Dr. Hanan Mohammed Kamal,** Professor of Food Science and Nutrition, Faculty of Specific Education, Ain Shams University for her objective discussion.

My special thanks to **Hoda abd Elrazek Kabary**, Researcher assistant microbiology, Agricultural Microbiology Department, National Research Centre for her help during practical work and sincere cooperation with me.

Finally I would like to express my deepest thanks and gratitude to my family for their continuous encouragement and support during this work.

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LIST OF ABBREVIATIONS

ALT	Alanine aminotransferase
AOAC	Association of Official Analytical Chemists
AST	Aspartate aminotransferase
B. animalis	*Bifidobacterium animalis*
B. bifidum	*Bifidobacterium bifidum*
B. breve	*Bifidobacterium brev*e
B. infantis	*Bifidobacterium infantis*
B. longum	*Bifidobacterium longum*
BW	Body weight
BWG	Body weight gain
CAT	Catalase
CFU/g	Colony forming unit per gram
Concn	Concentration
CVD	Cardiovascular disease
D	Day
E.coli	*Escherichia coli*
EDTA	Ethylenediamine Tetraacetic acid
EOS	Egyptian Organization for Standardization and Quality Control
FAO	Food and Agriculture Organization
FER	Feed efficiency ratio
FSFM	Fermented soy milk and flaxseed milk
g	Gram
g/l	Gram per liter

g/mL	Gram per Milliliter
GLUT2	Glucose transporter 2
GSH-Px	Glutathione peroxidase
GT	Glutathione S-transferase
H&E	Hematoxylin and Eosin
HDL-c	High-density lipoprotein cholesterol
I.O.S	International Organization for Standardization
ICMSF	International Commission on Microbiological Specifications for Foods
IDF	International Dairy Federation
KW/BW	kidney weight/ body weight
L. acidophilus	*Lactobacillus acidophilus*
L. Bulgaricus	*Lactobacillus Bulgaricus*
L. Rhamnosus	*Lactobacillus rhamnosus*
LDL-c	Low - Density Lipoprotein Cholesterol
MDA	Malondialdehyde
Mg	Milligram
mg/dl	milligrams per deciliter
Ml	Milliliter
mmol/L	Millmoles per liter
NAFLD	Non-alcoholic fatty liver disease
ROS	Reactive oxygen species
S. *salivariu*	*Streptococcus salivarius*
S. thermophiles	*Streptococcus thermophilus*
SOD	Superoxide dismutase
SPSS	Statistical Package for the Social Sciences
STZ	Streptozotocin

T2DM	Type 2 diabetes mellitus
TBA	Thiobarbituric acid
TBC	Total bacterial counts
TC	Total cholesterol
TCA	Total Antioxidant capacity
TG	Triglycerides
TN	Total Nitrogen
TVCBC	Total viable count of *Bifidobacteria*
TVCYC	Total viable count of yoghurt culture
UNU	United Nations University
VLDL -c	Very Low Density Lipoprotein Cholesterol
w/v	Weight/Volume
WHO	World Health Organization
Y & M	Yeasts and molds
%	Percentage