Comparative Study of The possible Effect of Bovine and Some Plant-based Milk on Cola-induced Enamel Erosion on Extracted Human Mandibular First Premolar

(Scanning Electron Microscope and X-ray microanalysis Evaluation)

Thesis submitted for partial fulfillment of Master Degree in Oral Biology

By

Nehad Mostafa Abdel-Monsif
B.D.S
Faculty of Oral and Dental medicine, Future University 2011

Faculty of Dentistry
Ain Shams University
2017

Under Supervision of

Prof. Dr. Medhat Ahmed El-Zainy

Professor of Oral Biology and
Former Vice Dean of Society and Environmental Affairs
Faculty of Dentistry, Ain-Shams University

Dr. Marwa M. Abd El-Hamid

Lecturer of Oral Biology
Faculty of Dentistry, Ain-Shams University

Faculty of Dentistry
Ain Shams University
2017

Dedication

This work is dedicated to

***My parents** for their love, prayers, guidance, encouragement throughout my life*

***My husband Sherif Gamal** for being my inspiration to succeed and motivation to continue.*

My sister Gehad

for her continued support and guidance And last but not least I dedicate this work

*To **my brothers Mohamed&Youssif***

for their love and support

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Abstract

Increased consumption of acidic soft drinks is becoming an important factor in the development of erosive wear .The potential of dairy drinks to protect enamel against dental erosion has been recorded. Recently, the demand for plant based milk beverages has been gaining popularity and used as an alternative to cow's milk. **Aim:** reveal and compare the possible effects of bovine and three types of plant-based milk on enamel erosion caused by Coca-Cola®. **Material and method**: 42 extracted premolars were distributed over three groups**:** Control negative group where teeth were not subjected to any treatment, Control positive group where teeth were subjected to Coca-Cola® and Experimental group where teeth were divided into four subgroups and subjected to Coca-Cola® then soaked in certain type of milk (bovine, soy, almond or oat milk). All groups were prepared for SEM analysis and EDAX. **Results**: Coca-Cola® beverage significantly altered enamel superficial surface structure causing irregular surface, erosive lesions and cracks .Bovine and plant based milk has a reparative effect on eroded cervical buccal enamel. **Conclusion:** Almond milk showed better results than other types of milk used concerning Ca and P levels as well as surface morphological alternations. Soy milk showed the least enamel remineralizing effect.

List of Contents

List of Abbreviations

ANOVA	Analysis Of Variance
BC	Before Christ
DRI	Daily Recommended Intake
EDXA	Energy Dispersive X-ray Micro-Analysis
E150d	Sulphite Ammonia Caramel
FDA	Food & Drug Administration
FEI	Field Electron & Ion
HAP	Hydroxyapatite
LD machine	Linked Data machine
LDL	Low Density Lipoproteins
LMR	Longitudinal Micro Radiography
NDNS	National Diet & Nutrition Surveys
pH	power of Hydrogen
PLM	Polarization Light Microscope
P-value	Probability value
RDA	Recommended Daily Allowance
SD	Standard Deviation
SEM	Scanning Electron Microscope
SNF	Solid Not Fat
S-UTW detector	Super Ultra-Thin window detector
TA	Titratable Acidity
UHT	Ultra- High Temperature
UK	United Kingdom
USA	United States of America
W.r.t	With respect to
Wt%	Weight Percentage

List of Figures

Fig. No. Title Page No.