

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**

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2017

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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*

A decorative border made of dried green and yellow plant material, possibly a type of grass or herb, is arranged in a rectangular frame around the central text. The plants are pressed and dried, showing their natural texture and color.

Acknowledgment

*First and foremost, I would like to thank **my God** for everything in my life.*

*I would like to express my deepest gratitude to my supervisor **Prof. Medhat El Zainy***

I will always be grateful to him for allowing me to be his student, His guidance helped me in all the time of research and writing of this thesis.

*I would like to express my sincere gratitude to my advisor **Dr. Marwa m. Abdel-hamid** for the continuous support, her patience, enthusiasm and guidance. I am also grateful to **DrAmanyRabea** for her continuous support, guidance and help.*

*I want to thank **Dr.Sherif Gamal** and Mr. **Mohamed Ezzat** for help. I am also grateful to **Eng. David Shokry** for his help in statistic.*

*My sincerest appreciation goes to **Oral Biology Department in Future University in Egypt.***

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.

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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	Titrateable Acidity
UHT	Ultra- High Temperature
UK	United Kingdom
USA	United States of America
W.r.t	With respect to
Wt%	Weight Percentage

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