

Influence of Addition of Osteogenic Supplements to MTA on the Level of Expression of Mineralizing Genes during Pulp Capping of Teeth

Thesis submitted to Faculty of dentistry, Ain Shams
University

In partial fulfillment of the requirements of Doctor's
degree in Endodontics

BY

Ramy Mohamad Ashraf

(B.D.S) 6th October University-Egypt

(M.Sc) Ain Shams University-Egypt

Faculty of Dentistry

Ain Shams University

2019

Supervised by
Prof. Dr. Salma EL-Ashry

Professor of Endodontics,
Faculty of Dentistry, Ain Shams University

Prof. Dr. Ashraf Mohamed Abdel Rahman Abu-Seida

Professor of Surgery, Anesthesiology and Radiology,
Faculty of Veterinary Medicine, Cairo University

ACKNOWLEDGMENT

- First of all, I want to thank **GOD** for supporting and guiding me throughout my life.
- My sincere gratitude and appreciation to **Professor Dr Salma el-Ashry** for her unforgettable help, generosity in giving her time, effort and advice.
- I would like to express my sincere thanks and appreciation to **Professor Dr Ashraf Abu-Seida** for his support, valuable efforts and advices in producing this work.
- I would like to thank **Professor Dr Ehab Hassanien**, Professor of Endodontics and Chairman of Endodontic department, Ain Shams University, for his valuable help, advice and cooperation.
- I would like to thank **Professor Dr Amr Abdel Aziz El-Sayed**, Professor of Internal medicine and animal infectious diseases, Faculty of Veterinary medicine, Cairo University, for his valuable assistance and advices in the gene analysis tests.
- I would like to thank **Dr Sherif Hassan**, Associate Professor of Oral biology, Faculty of Dentistry, Al-Azhar University, for his help and guidance in the histopathological examinations.

INTRODUCTION

REVIEW OF
LITERATURE

AIM OF STUDY

MATERIALS AND METHODS

RESULTS

DISCUSSION

SUMMARY AND CONCLUSION

REFERENCES

ARABIC SUMMARY

تأثير إضافة المكملات المكونة للعظم إلى ثالث أكسيد المعادن الكلي على مستوى التعبير الجيني للتمعدن خلال تغطية اللب للأسنان

بحث مقدم الى كلية طب الأسنان جامعة عين شمس توطئة للحصول
على درجة الدكتوراه فى تخصص علاج الجذور

مقدمة من الطبيب

رامى محمد أشرف

بكالوريوس طب وجراحة الفم والأسنان- جامعة ٦ أكتوبر (٢٠٠٤)

ماجستير علاج الجذور- جامعة عين شمس (٢٠١١)

كلية طب الأسنان

جامعة عين شمس

٢٠١٩

تحت إشراف

أ.د/ سلمى العشري

أستاذ علاج الجذور كلية طب الأسنان جامعة عين شمس

أ.د/ أشرف محمد عبد الرحمن أبو سعدة

أستاذ الجراحة و التخدير و الأشعة كلية الطب البيطري جامعة القاهرة

LIST OF CONTENTS

	Page
Introduction	1
Review of literature.....	3
I. Capping materials.....	3
II. Genes responsible for odontoblastic differentiation.....	12
III. Expression of odontoblastic differentiation genes by PCR.....	13
IV. Histological evaluation of exposed dental pulps capped by different capping materials.....	20
Aim of study.....	25
Materials and methods.....	26
Results.....	44
Discussion.....	79
Summary and conclusions.....	86
References.....	88
Arabic summary.....	97