THE EFFECT OF DIFFERENT BLEACHING AGENTS ON THE STRUCTURAL CHANGE OF HUMAN TEETH

(In Vitro study)

Thesis

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(Endodontics)

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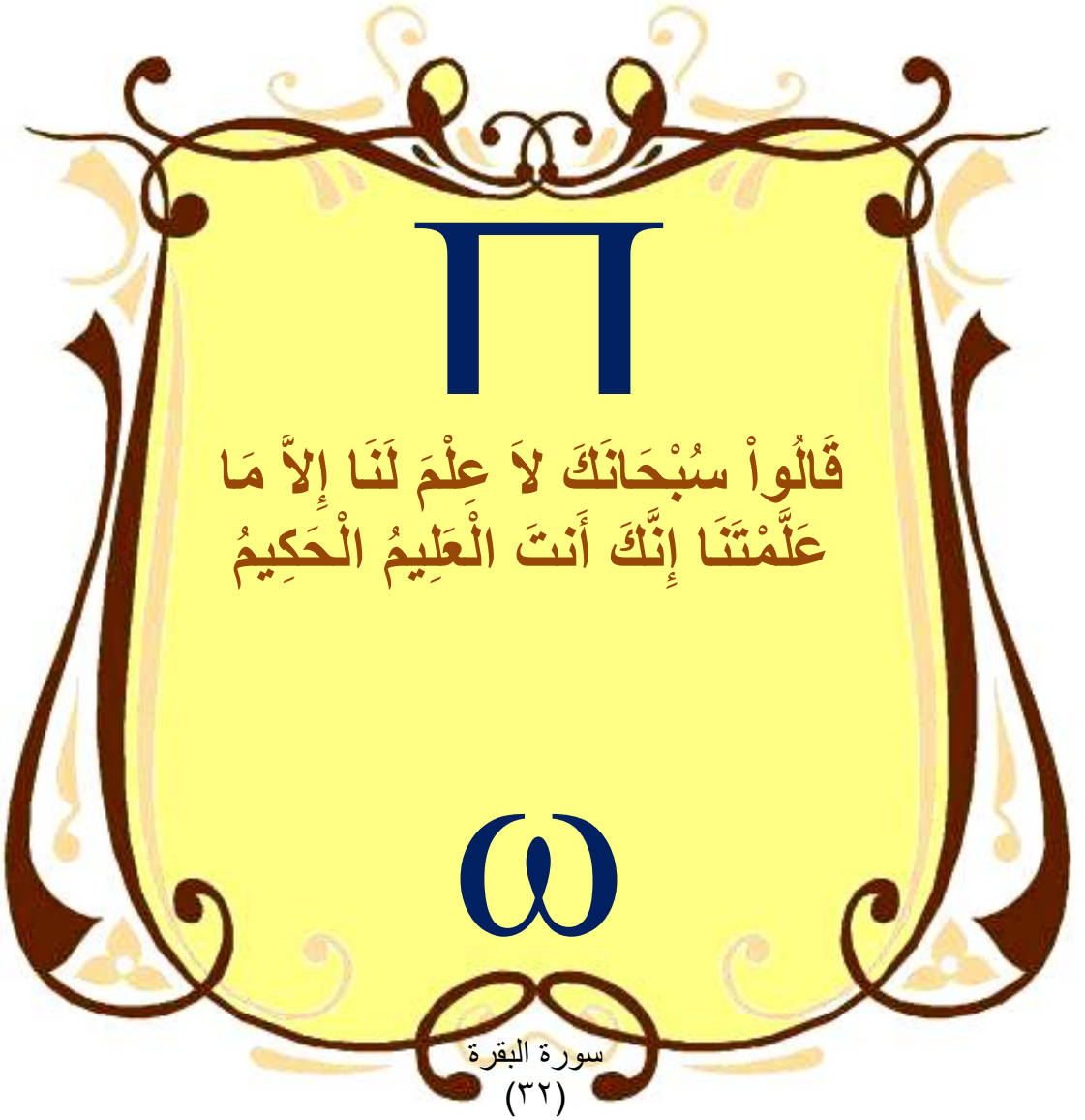

قَالُواْ سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

سورة البقرة
(٣٢)

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Without you I would never be what I am today, I really love you and thank you for being in my life.

My Mother,

Who supported and helped me all the time.

My Father,

I love and respect you so much.

My Sister and Brothers

For their continuous love and support.

My Daughter,

Who lighten up my life, I wish you a long happy life.

And I really want to thank everyone supported me in this work.

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Discolored teeth, especially in the anterior region leads to cosmetic impairment making patient demand for whiter teeth growing. As a result teeth whitening is now the most commonly requested elective cosmetic service in the dental office.

Discoloration may be caused by endodontic treatment in which the root filled teeth may turn dark and lose translucency. Treatment modalities for these cases includes crowns and veneers which are not always the right solution as it is expensive, invasive relatively complicated and less conservative to dental hard tissues.

So, whitening of teeth is a successful alternative therapeutic method that should be used whenever indicated. Best results will be obtained if the cause of discoloration is properly diagnosed and the bleaching material and technique where properly selected.

Recently many bleaching materials & techniques are available, but the effect of these materials on hard dental structure should be evaluated carefully to help bleaching seekers to get a perfect smile by using the safest materials and techniques available.

REVIEW OF LITERATURE

People have long been looking for the white perfect smile especially that the lighter dentition always associated with health, young and vigor. Recently many bleaching materials are available in the market in the form of pastes, strips …etc. These bleaching materials may cause alterations in dental tissues, so it is important to understand more about the effect of these materials on tooth structure to eliminate the drawbacks of their use.

The bleaching process involves the direct contact of the whitening products to the tooth surface for a variable time. Such contact could cause alterations in the physical and chemical characteristics of tooth structure. Enamel is highly mineralized, composed of ٩٦٪ mineral and ٤٪ organic material and water. The inorganic content of enamel is a crystalline calcium phosphate (hydroxyapetite) substituted with carbonate ions. The fundamental organizational units of enamel are rods (prisms) and inter rod enamel (inter-prismatic substance). Ultra-structural studies of enamel using electron microscopy have added greatly to the understanding of this complex process. Dentin is made up of ٧٠٪ inorganic material, ٢٠٪ organic material and ١٠٪ water by weight, it is softer than enamel.

Historical Review of Bleaching Agents:

Bleaching of discolored non vital teeth were first described in the middle of the ١٩th century. Chlorinated lime was recommended for the whitening of non-vital teeth, as early as

١٨٤٨ . Later, vital teeth were treated with oxalic acid as early as ١٨٦٨ and other agents such as chlorine compound and solutions. Sodium peroxide, Sodium hypochlorite or mixtures consisting of ٢٥٪ hydrogen peroxide in ٧٥٪ ether (pyrozone) were used to bleach non-vital teeth. An early description of hydrogen peroxide application was reported ١٨٨٤. Superoxol (٣٠٪ hydrogen peroxide, H_2O_2) was also mentioned.

Hydrogen peroxide was proved as the most effective bleaching agent, because of its unique ability to penetrate the tooth structure. In an attempt to increase the effectiveness of hydrogen peroxide, decomposition of H_2O_2 into active oxygen is accelerated by application of heat, addition of sodium hydroxide or light. Abbot used the high intensity light to accelerate the bleaching process successfully ١٩١٨ [١]. This heat and light peroxide –catalyst process is still being used today.

There were little public interest till the late ١٩٥٠s and early ١٩٦٠s, when the full impact of the new tetracycline antibiotics on tooth color began to become apparent.In١٩٦٠s,Klusmier[٢,٣],an orthodontist discovered a process that led to the home bleaching technique, Klusmier instructed one of his patients to use glyoxide ,which contains ١٠٪ carbamide peroxide to facilitate tissue healing then the patient returned with improved tissue health and teeth significantly lighter in color. Klusmier then used this technique to lighten teeth color. Dr John Munro used this technique in ١٩٨٦ to control bacterial growth after root planning also noticed that the teeth lightened.