شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HANAA ALY

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

وَمَا تَوْفِيقِي إِلَّا بِاللَّهِ عَلَيْهِ تَوَكَّلْتُ وَإِلَيْهِ أُنِيبُ

صَدَقَ اللَّهُ الْعَظِيمُ

Evaluation of a Newly Formulated Anti-bacterial Flowable Composite Material

Thesis Submitted to the Biomaterials Department Faculty of Dentistry Ain-Shams University in partial fulfillment of the requirements for the PhD Degree in Biomaterials Science

By

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Dedication

This thesis is wholeheartedly dedicated to ….

The soul of my grandfather, supporter, and God father

General Wagih El Degwi

The soul of my beloved uncle, my mentor & source of inspiration

Prof. Dr Sherif EL Degwi

And finally, to the soul of my best friend and soulmate

Dr.Miram El Fallah

I really wish you could have all been here to share with me such an accomplishment

May you rest in eternal peace ….

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Introduction

Dental caries is a very common localized and transmissible pathological infectious disease that results in the destruction of hard dental tissues [(1)]. The different treatment modalities of dental caries include the removal of decayed dental tissues and restoring them with various types of dental restorations, such as dental amalgam, resin composites, ceramics, and gold.

The scientific developments and advances in restorative dental materials, have made resin composites one of the most commonly used materials worldwide for different classes of restorations. Owing to its ability to bind readily to the tooth structure with adhesives, and most importantly having a greater range of shades that aid in close matching to the natural teeth allowing the restoration to look imperceptible [(2)].

Resin composite restorations are characterized by a high compressive strength relative to most of the other restorative materials [(3)]. Properties of resin composites can be altered to suit a wider range of uses by modifying several factors such as the size of the filler particles, and the activation process. Depending on these properties, resin composites can be used in different parts of the oral cavity.

Flowable resin composites with improved mechanical and chemical characteristics have been widely used in the clinical practice. These resin composites are low-viscosity materials with a reduced amount of inorganic filler particles and a higher percentage of resinous components. Flowable resin composites with their low elastic modulus and minimal stress contraction, compete with stress development potentially helping in maintaining the marginal seal of the restorations. The flowable resin composites are readily workable and adaptable to cavity walls and their use can reduce marginal defects, cuspal deflections and polymerization shrinkage in restorations [(4)].