



Republic of Iraq
Ministry of Higher Education
And Scientific Research
University of Baghdad
College of Dentistry



**Studying the Effect of Ascorbic Acid on Some Properties
of Heat Cure Denture Base Material Polymerized by
Autoclave and Water Bath Method**

A Thesis Submitted to the Council of the College of Dentistry at the
University of Baghdad in Partial Fulfillment of the Requirement for the
Degree of Master of Science in Prosthetic Dentistry

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ABSTRACT

Background:

Still heat cure acrylic is the most widely used denture base materials. But it has some inadequate properties like strength and antimicrobial activity. The present study aimed to evaluate the use of ascorbic acid powder with water-bath and autoclave polymerized heat cure denture base material. So, this study was to evaluate the effect of ascorbic acid on transverse strength, impact strength, surface roughness, surface hardness, water sorption, water solubility of heat cure acrylic.

Materials and Method:

As there is a wide range of difference between particle size of the ascorbic acid powder and heat cure acrylic powder grinding of ascorbic acid powder was performed by using an electrical grinding machine. In this study, vertex regular heat polymerized resin were used to prepare specimens in two method of polymerization autoclave and water bath polymerization. The curing cycle for autoclave was (134⁰C, 2bar, 15minutes). while for water-bath (20⁰C to 100⁰C water start boiling then 30minutes at 100⁰C). Ascorbic acid was used in two form addition form and immersion form with a concentration of 1% and 30 minutes was the time for immersion. The data were analyzed using ANOVA tests which was considered statistically significant at a level of < 0.05.

Results:

FTIR spectrum of non-grinding particle and grinding particle of ascorbic acid showed that there was the same chemical structure for both grinding and non-grinding particle of ascorbic acid. And results of all tested groups showed a statistically non-significant changes.

ABSTRACT

Conclusion: using 1% ascorbic acid with the heat cure acrylic showed no adversely effect on the mechanical properties of heat cure acrylic for both water bath and autoclave by immersion and addition form.



جمهورية العراق
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دراسة تأثير حامض الاسكوريك على بعض خواص مادة قاعدة الطقم المبلمر حرارياً بواسطة الأوتوكلاف وطريقة الحمام المائي.

رسالة

مقدمة الى مجلس كلية طب الاسنان / جامعة بغداد
كجزء من متطلبات نيل درجة الماجستير في التعويضات الاصطناعية

من قبل

احمد محمد نمر

بكالوريوس طب وجراحة الفم والاسنان

بإشراف

أ.د رغداء كريم جاسم

دكتوراه في التعويضات الاصطناعية