

**Effect of different
denture cleanser solutions on some
mechanical and physical properties of nylon
and heat cured acrylic denture base
materials**

A thesis

Submitted to the Council of the College of Dentistry

University of Baghdad

In partial Fulfillment of the Requirements for the

Degree of Master of Science in

Prosthodontic

By

Mohammed Salman Hameed

B.D.S

Supervised by

Prof. Dr. Shatha Saleem Al-Ameer

Abstract

Statement of problem : Thermoplastic non –metal clasp denture became recently the most attractive option for patients due to its esthetic outcome and many other advantages .Yet ,cleaning of the denture remains an important procedure to get the best advantages regardless of the type of denture material. The chemical immersed denture cleanser is the most widely used method by the patients to maintain clean and healthy denture , but the use of such cleanser may have harmful effect on the denture base materials .

Purpose : The purpose of this study was to evaluate some physical and mechanical properties of one of the thermoplastic denture base materials which is (nylon) compared with those belong to conventional heat cured acrylic and to observe the effect of two prepared denture cleansers (4% oxalic acid ,4% tartaric acid) in addition to one commercial denture cleanser (lacalut dent) on the indentation hardness , flexural strength , flexibility , surface roughness and color stability of nylon and conventional heat cured acrylic.

Material and method : Two hundred and sixty specimens (130 nylon and 130 acrylic) were prepared ,60 specimens (30 nylon ,30 acrylic) were used to test each of the properties mentioned above except an 80 specimens were used (40 nylon ,40 acrylic) to test flexural strength and flexibility. 10 specimens were prepared for each denture cleanser solution .

Result :The result obtained in the present study showed high significant difference between nylon and conventional heat cured acrylic in four properties which were: indentation hardness , flexural strength , flexibility and color stability ,with no difference in the surface roughness .Furthermore oxalic acid and tartaric acid cleansers significantly decrease the indentation hardness and flexural strength of conventional heat cured acrylic while lacalut dent didn't significantly affect those properties of acrylic, also all the three cleansers didn't affect the indentation hardness and flexural strength of nylon .

oxalic acid and tartaric acid cleansers significantly decreased the flexibility of nylon while lacalut dent didn't significantly changed this property. All the three cleanser had no effect on the flexibility of acrylic. All the three cleanser had no effect on the surface roughness or color stability of nylon and acrylic.

Conclusion: Conclusion was derived that nylon had better flexibility and translucency than conventional heat cured acrylic while conventional heat cured acrylic had better indentation hardness and flexural strength than nylon. Regarding surface roughness the two polymers show no significant difference between them.

There were an adverse effect of the prepared denture cleansers which contain isopropyl alcohol on indentation hardness and flexural strength of conventional heat cured acrylic, it decreased both those properties, so it is advised not to use solution containing alcohol as acrylic denture cleanser also it is advised not to use it with nylon denture because it decreased its flexibility. Lacalut dent which is an oxygenating commercial denture cleanser, had no adverse effects on both polymers used in the study, so it can be used safely with them.