

Ministry of Higher Education
and Scientific Research
University of Baghdad
College of Dentistry



The effect of *Aloe vera* extract on *candida albicans* growth and some mechanical properties of denture soft lining material

A thesis

Submitted to the council of College of Dentistry at the University of Baghdad in partial fulfillment of the requirements for the Degree of Master of Science in Prosthodontics

By

Aseel Riyadh Abdulwahhab
B.D.S.

Supervised by

Prof. Dr. Raghdaa Kareem Jassim
B.D.S., M.Sc., Ph.D.

2018 A.D.

1439 A.H

Abstract

One of the serious problems of soft lining materials is its colonization by *candida albicans* and subsequent formation of denture stomatitis. With the recent revival interest in medicinal plants, *Aloe vera* is one of them which have an application in some fields of dentistry.

The present study aimed to assess the effect of *Aloe vera* on the adherence of *candida albicans*, shear bond strength and tear strength by two different forms of application. First form was incorporation of *Aloe vera* powder with heat cure acrylic soft liner powder. The second form was as a denture disinfectant by mixing *Aloe vera* powder with distilled water; in addition to study the effect of this material after 2 and 4 weeks incubation in artificial saliva at 37°C.

Powder form of *Aloe vera* whole leaf extract was used in two forms, incorporated with heat cure acrylic soft liner powder and as denture disinfectant form. The suitable percentages used in the main study were based on the results of pilot study, for the first form, two different percentages (3% and 10%) and for denture disinfectant (15%) after 30 and 60 minutes immersion period. Three hundred and sixty specimens were prepared (270 for the incorporation form and 90 for the disinfectant form) and divided into three groups according to the tests performed and each group was further divided into 3 groups according to the time intervals. *Candida albicans* adherence test was performed to evaluate the anti-candidal activity of *Aloe vera*. Shear bond strength and tear strength tests were performed. All data were analyzed using SPSS V21 software.

For powder form, both concentration of *Aloe vera* showed a statistically highly significant decrease in *candida albicans* cell count in

comparison to control group. Also there was a statistically significant increase in the shear bond strength and a non-significant difference in the tear strength of soft liner for the experimental groups. Also experimental groups after incubation in artificial saliva for 2 and 4 weeks showed a significant decrease in *candida albicans* cell count and a significant increase in shear bond strength and tear strength. For the second form, experimental group showed a statistically significant decrease in *candida albicans* adherence for the both immersion times, also there was a statistically non-significant difference in shear bond strength and a statistically significant increase in tear strength.

Incorporation of *Aloe vera* powder with soft liner powder helps to add an anti-candidal property to the heat cure acrylic soft liner, this addition results in increased shear bond strength and tear strength of soft liner. Beside that *Aloe vera* can be used as a disinfectant agent against *candida albicans* without affecting the shear bond strength and increasing the tear strength of soft lining material.