



**Comparative analysis of effect of eco-friendly and conventional disinfectants
on the durability of dental heat cured acrylic resin and GC-soft liner**

Abstract

Excessive use of chemical and pharmaceutical disinfectants harms both the environment and human health, in addition to having a deleterious effect on acrylic resin and soft liners. The aim of this article is evaluate the effect of eco-friendly disinfectant oils related to their PH value (*Nigella sativa*, sesame, olive, thymol, and ginger oil) compared to nystatin suspension on the hardness of heat cured acrylic resin and GC-Soft Liner throughout three months. Seventy samples were prepared: thirty-five from heat-cured acrylic resin (rectangular shaped 30 × 15 × 3 mm) and thirty-five from GC-extra soft lining material (circular shaped 20 × 4 mm, diameter and thickness, respectively). The samples were immersed in oils for three months for 8 hours daily. The hardness of the samples was examined using a Shore-D hardness durometer for acrylic resin and Shore-A hardness durometer for soft liner. The results demonstrated that there were no significant differences between all tested oils compared to nystatin suspension and distilled water in relation to hardness of heat cured acrylic resin and GC-soft liner except for the effect of thymol oil on acrylic samples, which still remained within clinically accepted hardness values. pH values ranged 5.9–7.0. Thymol is a weakly acidic oil, whereas other oils are of neutral to weakly acidic nature. All tested natural disinfectants would be safe and clinically accepted in relation to hardness of heat cured acrylic resin and GC-soft liner and could be used with minimum cost and optimum safety.