

Mechanical and Histological Significance of Nigella Sativa Oil Extract on Bone-Implant Interface

A Thesis

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ABSTRACT

Background: The new trend of coating implants with biological molecules has resulted in improvement in osseointegration. Natural plants can provide biological molecules which are biocompatible, abundant in source, has low cost and can be modified to host properties.

Aims of this study: The aim of this study is to evaluate the influence of coating implant with black seed oil extract on the strength of bone implant interface mechanically and histologically.

Materials and methods: Forty eight CpTi screw shaped implants (3.75mm in diameter, 8 mm in length) were placed in the tibiae bone of twelve New Zealand rabbits. Each animal received 4 implant (2 uncoated and 2 coated with black seed oil extract by dip coating technique). Twelve implants removed after each healing period of 2, 6 and 12 weeks using digital torque meter device constructed for the purpose of this study and four implants removed with bone block for histological study at each healing period.

Results: The mean removal torque values for coated implants was significantly higher than those for the uncoated implants over different time periods. In addition the histological picture show improved quality of bone response among the coated screws.

Conclusions: The coated implants seemed to be well tolerated by the bone since no adverse tissue reaction was evident and they have better torque resistance and appear to produce osteophilic surface favoring early osseointegration.