

**Assessment of the black seed oil extract
as an intracanal medicament
(A microbiological, histopathological,
and immunological study)**

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Abstract

The efficacy of medicaments in endodontic therapy has undergone many changes. In recent years, there has been a strong impetus to use the best-tolerated medications regardless of their antimicrobial efficacy. This study was conducted with the aim of assessing *Nigella sativa* oil (black seed oil), which is one of the herbal plants, as an intracanal medicament in comparison with krezofom through a microbiological, histopathological, and immunological studies.

In the microbiological study, the Minimum Inhibitory Concentraion (MIC) and Minimum Bactericidal Concentration (MBC) of the black seed oil extract were determined using the broth dilution method, followed by assessment of the antimicrobial effect of the black seed oil extract in direct contact and vapor action in comparison with krezofom using the disk method.

In the histopathological study, bone implantation test was used to assess the biocompatibility of the black seed oil extract and krezofom after 3 days, 7 days, 14 days, 30 days, and 45 days of implantation in the tibia bone of rabbits.

In the immunological study, the effects of the black seed oil extract and krezofom on the cellular immune system were assessed by the Delayed-Type Hypersensitivity skin testing (DTH) after intradermal injection of different amounts of the materials (10 μ L, 20 μ L, and 30 μ L) in the flank area of rabbits previously implanted with the materials in the tibia bone, while the effects of the materials on the humoral immune system were assessed by ELISA test.

The results of this study showed that the MIC and MBC of the black seed oil extract were 10%. The results of this study also showed that the black seed oil extract exhibited antimicrobial action in direct contact and vapor action comparable to krezofom, with better antimicrobial action when in direct contact as compared with the vapor action. The results also showed that the black seed oil extract was more biocompatible than krezofom and induced bone healing as

manifested by faster bone trabeculae formation and mature bone formation. On the other hand, the black seed oil extract stimulated the cellular immune system as shown by the DTH skin testing, while it had no effect on the humoral immune system as shown by ELISA test.

From the results of this study, we recommend the use of the black seed oil extract as an intracanal medicament since it possesses antimicrobial action, it is biocompatible, and it is immune enhancer since it has the ability to stimulate the cellular immune response.