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College of Dentistry



**Effect of Tea Tree, Thymus Vulgaris and
Nigella Sativa Oils on the Elimination of
Enterococcus Faecalis
(In Vitro Study)**

A Thesis

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Abstract

The main goal of chemomechanical endodontic treatment is the reduction or elimination of microorganisms from the root canal system. The intracanal medicaments were used to enhance the disinfection process.

This study was conducted to evaluate the antibacterial effect of thymus vulgaris, tea tree essential oils and cold pressed black seed oil against *E.faecalis*.

E.faecalis was isolated from ten patients in need for endodontic treatment. The sensitivity of *E.faecalis* to the tested oils was evaluated in different concentrations in agar well diffusion method and compared with calcium hydroxide. The sensitivity of *E.faecalis* to vapor of the tested oils was evaluated also, in disk vaporization method using inverted agar plate and compared to tricresol formalin (TC) and camphorated monochlorophenol (CMCP).

The micro broth dilution method was used to evaluate the minimum inhibitory concentrations (MIC) and the minimum bactericidal concentrations (MBC) of the tested oils against *E.faecalis*.

The presence of biologically active volatile components of two samples of Black seed oil with different origins was evaluated by using of high performance liquid chromatography (HPLC)

All the tested oils were with antibacterial activity against *E.faecalis* in different concentrations with different levels in agar well diffusion method and disk vaporization method. The MBC was $2\mu\text{l}/\text{mL}$, for thymus vulgaris oil and $32\mu\text{l}/\text{mL}$ for tea tree and Black seed oils.

The vapor forming medicaments (tricresol formalin and CMCP) induced effective antibacterial action but calcium hydroxide showed a low antibacterial action against *E.faecalis*.

The active volatile components were present in one sample of cold pressed black seed oil only (the Iraqi one).The three oil extracts were active against *E.faecalis*, and the origin, condition of storage and method of extraction may affect the components of cold pressed black seed oil.