

Herbal Alternatives to Synthetic Root Canal Disinfection in Human Teeth

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Aim of the study: An infected root canal system is a unique niche for the selective species of microorganisms. One of the major objectives of a root canal treatment is to disinfect the root canal system. Irrigation is carried out to reduce the number of bacteria in the root canals. A wide variety of synthetic antimicrobial agents have been used over the years as endodontic irrigants. The ideal root canal irrigant should (i) have a broad antimicrobial spectrum and high efficacy against anaerobic and facultative microorganisms in biofilms, (ii) dissolve necrotic pulp tissue remnants, (iii) inactivate endotoxin, (iv) prevent the formation of a smear layer and dissolve it, (v) be biocompatible and systemically nontoxic. Sodium hypochlorite (NaOCl) is one of the most widely used endodontic irrigant thanks to its ability to destroy a broad spectrum of microbes. However, many complications and undesirable characteristics such as tissue toxicity, allergic potential, and inability to remove the smear layer are reported. Chlorhexidine is another commonly used antimicrobial agent with a wide spectrum antimicrobial activity and biocompatibility. However, it does not have tissue dissolving capabilities, may lead to dryness of the oral cavity burning sensation of the mouth and discolouration of teeth. The major side effects of these synthetic antimicrobial agents used in root canal irrigation are immune suppression, hypersensitivity, allergic reactions and resistance of microorganisms to these drugs; also some are mutagenic and cytotoxic. Therefore, there is a need to provide extensive researches to find plant based alternatives to the conventional agents. The aim of this presentation is to review the herbal agents reported to be effective in root canal disinfection.

Material and Methods: A PubMed search was made with the keywords; herbal, dentistry, root canal, and endodontics were selected for this review.

Results: More than 400 studies were available, which have investigated many plants with a potential source for new therapies in endodontics. Herbal agents such as *A. nilotica*, *A. barbadensis*, *A. lappa*, *A. indica*, carvacrol, *C. sylvestris*, *A. sativum*, *M. recutitia* L., *C. sinensis*, *C. limonum*, *M. citrifolia*, propolis, *P. guajava*, *P. corylifolia*, *R. damascena*, *R. lancia*, *S. persica*, *S. aromaticum*, *M. alternifolia*, *C. longa*, *G. glabra* can be used as an alternative intracanal medicament and can be used as potential root canal irrigants because of their anti-inflammatory, antimicrobial and immune-modulating activity. Propolis and *M. citrifolia* were found to be effective against *E. faecalis* (most common bacteria in secondary root canal infections).

Keywords: Chlorhexidine, herbs, irrigation, root canal, sodium hypochlorite.