ORIGINAL RESEARCH

Comparative evaluation of Antibacterial efficacy of a novel root canal irrigant-Hydrogen water with conventional irrigants Sodium hypochlorite and Chlorhexidine gluconate: An In vitro Study

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Running title – Antibacterial efficacy of Hydrogen water

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Abstract

Background: Endodontic infections have complex microbial flora including E-Faecalis. Root canal treatment attempts to eliminate microbial flora from the root canals. Improved irrigants are needed for this. Hence, researchers are trying to develop newer irrigants with better properties. This study attempts to examine the antibacterial efficiency of a novel irrigant, hydrogen water (HW), toward E. faecalis while comparing it with the conventional irrigants, notably sodium hypochlorite (NaOCl) and chlorhexidine (CHX).

Materials and Methods: Top surface of Petri dishes containing Blood Agar is flooded with 100µl inoculum suspension of E. faecalis and desiccated for 15 minutes. Three equidistant wells punched, 50µl of irrigants were put into the wells followed by incubation at 37ºC for 14 days. Growth inhibition zones were measured at the end of day 2 and day 14. Paired t-test and One-way ANOVA was applied.

Results: The highest values of zones of inhibition were obtained for sodium hypochlorite followed by chlorhexidine gluconate and least by hydrogen water both on day 2 and day 14 with statistically significant difference. On comparison of zones of inhibition between between day 2 and day 14 of treatment within the group also showed a statistically significant difference.

Conclusion: Though hydrogen water has lesser antimicrobial potential in comparison with NaOCl and CHX, considering its advantages like biocompatibility. So HW may be considered as an alternative biocompatible irrigant in endodontics. Irrigant activation procedures may be employed to augment its antibacterial efficacy.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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