IN BRIEF

- Bacteria must be eliminated from the root canal system prior to obturation for endodontic treatment to be successful.
- Sodium hypochlorite solution is the most effective endodontic irrigant in current usage, but it is not effective against all the bacteria found in the root canal system.
- Photo-Activated Disinfection (PAD) offers the potential to effectively kill endodontic bacteria with fewer toxic effects and more quickly than with sodium hypochlorite solution.

An alternative regimen for root canal disinfection

S. J. Bonsor,[1] R. Nichol,[2] T. M. S. Reid[3] and G. J. Pearson[4]

Objective To compare the effect of a combination of 20% citric acid solution and photo-activated disinfection with the use of 20% citric acid and 2.25% sodium hypochlorite solutions on bacterial load on the dentine walls in prepared canals *in vivo*.

Subjects and methods Sixty-four randomly selected cases were evaluated and allocated to one of two groups. In Group 1, after gaining access to the root canal, bacterial load on the canal walls was sampled using endodontic files. A further sample was taken after apex location and initial widening of the canal had been completed and the photo-activated disinfection process carried out. A final sample was taken after completion of the canal preparation using citric acid and sodium hypochlorite solutions. In Group 2, the initial sample was taken as described previously. A second sample was taken after conventional preparation using 20% citric acid and sodium hypochlorite solutions as co-irrigants. A final sample was then taken after a subsequent PAD treatment. All samples were cultured for facultative anaerobic bacteria.

Results Of the canals treated in Group 1 only two of the 23 canals infected showed culturable bacteria after the use of citric acid and photo-activated disinfection. Of these two canals, one was free of culturable bacteria on completion of conventional treatment but the other still contained culturable bacteria. In Group 2, four canals of the 23 infected initially, remained contaminated after conventional treatment. After subsequent photo-activated disinfection three of these four canals were free of culturable bacteria.

Conclusion Results indicate that the use of a chelating agent acting as a cleaner and disrupter of the biofilm and photo-activated disinfection to kill bacteria is an effective alternative to the use of hypochlorite as a root canal cleaning system.