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Chlorhexidine: is it still the gold standard?

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Abstract

After 20 years of use by the dental profession, chlorhexidine is recognized as the gold standard against which other antiplaque and gingivitis agents are measured. Chlorhexidine's antiplaque effect is a result of the dicationic nature of the chlorhexidine molecule, which affords the agent the property of persistence of antimicrobial effect at the tooth surface, through both bactericidal and bacteriostatic effects. Although other antiplaque agents may show either purely immediate effect, or limited persistence, the degree of chlorhexidine's persistence of effect at the tooth surface is the basis of its clinical efficacy. Similarly, the cationic nature of the chlorhexidine molecule is the basis of the most common side effect associated with the use of the agent--extrinsic tooth staining. Such tooth staining seems to be the result of a local precipitation reaction between tooth-bound chlorhexidine and chromogens found within foodstuffs and beverages. The cationic nature of the chlorhexidine molecule also means that the activity of the agent is rapidly reduced in the presence of anionic agents, specifically those found within certain types of toothpaste; thus care is required when using normal toothbrushing alongside chlorhexidine. By understanding how the chemical properties of the chlorhexidine molecule can explain the plethora of clinical efficacy and safety data, the use of chlorhexidine can be optimally aimed towards the patient groups who would most benefit from the superior therapeutic effect of the agent. Specifically, chlorhexidine would seem to be of most value to patients in whom the ability to perform adequate oral hygiene procedures has been compromised. In these individuals the delivery of the correct dose of chlorhexidine to the tooth surface can be optimized through the judicious use of the several different chlorhexidine formulations now available. Thus, by understanding the properties and limitations of the chlorhexidine molecule, the dental profession can ensure that the efficacy of the agent is maximized, and the side effects associated with the agent are minimized, allowing chlorhexidine to rightly remain the gold standard against which other antiplaque agents are measured.

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