

Can gingival health be controlled by antibacterial agents?

Antibacterial agents in the control of supragingival plaque B M Eley *Br Dent J* 1999; 186: 286–296

Abstract

This review considers the main agents which have been used as antibacterial agents in mouthwashes and other vehicles to inhibit the growth of supragingival plaque. The agents discussed are bisguanide antiseptics, quaternary ammonium compounds, phenolic antiseptics, hexetidine, povidone iodine, triclosan, delmopinol, salifluor, metal ions, sanguinarine, propolis and oxygenating agents. The plaque inhibitory, anti-plaque and anti-gingivitis properties of these agents are considered along with their substantivity, safety and possible clinical usefulness. Clinical trials of these agents that have been published are also reported. The possible clinical uses of antiseptic mouthwashes are finally considered along with some advice about assessing manufacturers claims. Throughout this review the terms plaque inhibitory, anti-plaque and anti-gingivitis have been used according to the clarification of terminology suggested by the European Federation of Periodontology at its second workshop. This defines a plaque inhibitory effect as one reducing plaque to levels insufficient to prevent the development of gingivitis; an anti-plaque effect as one which produces a prolonged and profound reduction in plaque sufficient to prevent the development of gingivitis; and anti-gingivitis as an anti-inflammatory effect on the gingival health not necessarily mediated through an effect on plaque.

In brief

- Several antiseptics such as bisguanide antiseptics, quaternary ammonium compounds, phenolic, hexetidine, povidone iodine, triclosan, delmopinol, salifluor, metal ions, sanguinarine, propolis and oxygenating agents have been shown to possess antibacterial and plaque inhibiting activity.
- A few agents such as tricolsan, Listerine, delmopinol and salifluor may also have anti-inflammatory properties.
- Only one group of antiseptics, the bisguanide antiseptic, have substantivity and therefore can remain active in the mouth for long enough periods to prevent the development of gingivitis and hence are true antiplaque agents.
- True anti-plaque agents in mouth washes can be used to prevent the development of gingivitis in situations where normal oral hygiene is not possible but should not be used to treat existing gingivitis or periodontitis because they are unable to penetrate thick plaque or to pass into the gingival crevice.

Comment

A number of reviews on chemical plaque control have appeared over the years in specialist journals, however there is some need for an update for the general practitioner with particular reference to clinical usage. This review goes some way in fulfilling this need. Once again it needs to be re-emphasised that antimicrobials in toothpastes and mouthrinses affect supragingival plaque and thus are of value only at inhibiting or controlling gingivitis. Insufficient quantities and limited penetration below the gum margin precludes their use in the treatment of periodontitis.

There are presently a large number of mouthwashes and toothpastes available to the public which claim a benefit to gum health. In discussing these claims certain terminology has been used which has initially caused some confusion in evaluating effectiveness. This review defines terms such as antiplaque, plaque inhibitory action and anti-gingivitis activity according to guidelines agreed by the European Federation of Periodontology. Subsequently, the review on individual antibacterial agents is easier to comprehend when evaluating effectiveness of individual agents.

A large section of any review on chemical plaque control is naturally devoted to chlorhexidine. So much information has been accrued over the years on the bisguanide, it is difficult to know what to include in a review and what to leave out. Topics of scientific interest such as its mode of action, safety and side effects are important. However from a clinical point of view indications for clinical usage are most useful to the practitioner.

In view of the side effects of chlorhexidine and in particular its propensity for producing extrinsic staining, alternative agents have been sought after. There are numerous less effective antibacterial agents. Delmopinol and salifluor are worth mentioning as examples of more recently developed products with some potential future value.

A considerable section is devoted to triclosan and is understandable in view of the current marketing of triclosan containing products. Any review on triclosan must spend considerable time on triclosan toothpaste and its effects on plaque and gingival health. If recently published articles are accepted, it is apparent that triclosan tooth-

paste may also retard progression of periodontitis.

As issues of concern to both clinicians and manufacturers, the effects of alcohol in mouthwashes on oral health has to be mentioned. The health risk of cancer and physical effects on composite and glass ionomer restorations has not yet been fully evaluated.

Certainly antibacterial mouthwashes and toothpastes have a part to play in oral health. Indications for use of mouthwashes in specific clinical situations is needed and this review will help the practitioner by categorising mouthwashes according to their properties and effectiveness. Moreover, the practitioner will be in a better position to assess manufacturer's claims.

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