ANTIBACTERIAL ANTIPLAQUE MOUTHWASH COMPOSITION

This application is a continuation, of application Ser. No. 07/398,592, filed Aug. 28, 1989, now U.S. Pat. No. 5,188,821 which is a continuation-in-part of Ser. No. 07/291,712, filed Dec. 29, 1988, now U.S. Pat. No. 4,894,220, granted Jan. 16, 1990, which is a continuation-in-part of application Ser. No. 07/008,901, filed Jan. 30, 1987, now abandoned.

This invention relates to an antibacterial antiplaque mouthwash composition. More particularly, it relates to a mouthwash composition containing a substantially water-insoluble noncationic antibacterial agent effective to inhibit plaque.

Dental plaque is a soft deposit which forms on teeth as opposed to calculus which is a hard calcified deposit on teeth. Unlike calculus, plaque may form on any part of the tooth surface, particularly including at the gingival margin. Hence, besides being unsightly, it is implicated in the occurrence of gingivitis.

Accordingly, it is highly desirable to include antimicrobial agents which have been known to reduce plaque in oral compositions. Frequently, cationic antibacterial agents have been suggested.

Moreover, in U.S. Pat. No. 4,022,880 to Vinson et al, a compound providing zinc ions as an anticalculus agent is admixed with an antibacterial agent effective to retard the growth of plaque bacteria. A wide variety of antibacterial agents are described with the zinc compounds including cationic materials such as guanides and quaternary ammonium compounds as well as non-cationic compounds such as halogenated salicylanilides and halogenated hydroxydiphenyl ethers. The noncationic antibacterial antiplaque halogenated hydroxydiphenyl ether, triclosan, has also been described in combinations with zinc citrate trihydrate in European Patent 0161,899 to Saxton et al. Also, in European Patent Publication 0271,332 to Davis, mouthwash propylene glycol which also contains triclosan is disclosed and in PCT Publication No. WO92/00721 to Reed, mouthwash with a broad range of ethanol content which also contains triclosan is disclosed.

The cationic antibacterial materials such as chlorhexidine, benzthonium chloride and cetyl pyridinium chloride have been the subject of great investigation as antibacterial antiplaque agents. However, they are generally not effective when used with anionic materials. Noncationic antibacterial materials, on the other hand, can be compatible with anionic components in an oral composition.

However, oral compositions typically are mixtures of numerous components and even such typically neutral materials as humectants can affect performance of such compositions.

Moreover, even noncationic antibacterial antiplaque agents may have limited antiplaque effectiveness with commonly employed materials such as polyphosphate anticalculus agents which are disclosed together to U.S. Pat. No. 4,894,220 of Nabi et al, in British Patent Publication 2,200,551 of Gaffar et al and EP 0251,591 of Jackson et al. In British Patent Publication 2,235,133 of Gaffar et al, it is shown that the antiplaque effectiveness is greatly enhanced by including an antibacterial-enhancing agent (AEA) which enhances the delivery of said antibacterial agent to, and retention thereof on, oral surfaces and by providing optimized amounts and ratios of polyphosphate and AEA.

Further, even when polyphosphate anticalculus agent is not present as shown in U.S. Pat. No. 4,894,220 (noted above) and in British Patent Publication 2,227,660 Gaffar et al, antiplaque effectiveness on soft oral tissue is optimized in oral compositions containing the noncationic antibacterial agent and said AEA.

It is an advantage of this invention that a mouthwash composition is obtained in which substantially water-insoluble noncationic antibacterial agent is solubilized without excessive presence of solvent to provide substantial antiplague effectiveness.

It is an advantage of this invention that substantial antiplaque effectiveness is attained even when the said AEA is not present.

It is an advantage of the invention that by limiting the amount of solvent for the antibacterial agent while achieving its complete solubilization in the mouthrinse, possible side-effects of the solvent, such as a "burning" sensation provided by alcohol, are reduced.

it is an advantage of this invention that the antiplaque mouthwash is effective when used before or after toothbrushing.

Additional advantages of this invention will be apparent from consideration of the following specification.

In accordance with certain of its aspects, this invention relates to a mouthwash composition having a vehicle comprising water and an aqueous nontoxic alkyl mono-or di-hydric alcohol and dissolved therein an effective antiplaque amount up to about 0.09%. of a substantially water insoluble noncationic antibacterial agent, said alcohol being a solvent for said antibacterial agent, wherein the weight ratio of water to alcohol is in excess of about 10:1 and the amount of solvent is sufficient to completely dissolve said antibacterial agent in said mouthwash composition.

Typical examples of water insoluble noncationic antibacterial agents which are particularly desirable for their antiplaque effectiveness, safety and formulation are:

Halogenated Diphenyl Ethers

2',4,4'-trichloro-21'-hydroxy-diphenyl ether (Triclosan)
2,2'-dihydroxy-5,5'-dibromo-diphenyl ether

Halogenated Salicylanilides

4', 5'-dibromosalicylanilide
3,4'5'-trichlorosalcylanilide
3,4,5-tribromosalicylanilide
2,3,3',5-tetrachlorosalicylanilide
3,3,3',5-tetrachlorosalicylanilide
3,5-dibromo-3'-trifluoromethyl salicylanilide
5-n-octanoyl-3'-trifluoromethyJ. salicylanilide
3,5-dibromo-4'trifluoromethyl salicylanilide
3,5-dibromo-3'-trifluoromethyl salicylanilide (Fluro-phene)

Benzoic Esters

Methyl	- p-Hydroxybenzoic Ester
Ethyl	- p-Hydroxybenzoic Ester
Propyl	- p-Hydroxybenzoic Ester
Butyl	- p-Hydroxybenzoic Ester

Sesquiterpene Alcohols

Farnesol