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Chlorine Dioxide

A Safe & Effective Antimicrobial

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Plaque control is the best strategy to maintain good oral hygiene. Tooth brushing removes sixty percent of plaque and only twenty eight percent of Indian population brush their teeth twice a day. Therefore, antimicrobial mouthwash is recommended as an adjunct to mechanical plaque control. The daily use of mouthwash maintains good oral hygiene and patients can easily incorporate into their home care regimen. Various antimicrobial agents such as chlorhexidine, chlorine dioxide, cetylpyridinium chloride, triclosan, essential oils, metal salts, plant extracts etc are used to control plaque.

Stabilized Chlorine Dioxide

Stabilized chlorine dioxide is an aqueous solution comprising of sodium chlorite, a salt of chlorine dioxide. Molecular chlorine dioxide is released from aqueous solution, when the pH of stabilized chlorine dioxide is reduced or exposed to plaque in the mouth.

Chlorine dioxide (ClO_2) is used to maintain oral hygiene, eliminate halitosis, gingivitis, pre and post surgery, and as disinfectant. It has additional patient acceptability relating to its safe, non toxic and non-staining features for long term use.

Antimicrobial and Oxidizing Action:

ClO_2 is an excellent, effective antimicrobial agent against aerobic, anaerobic and facultative micro-organisms. ClO_2 penetrate into the bacterial cell wall and react with vital amino acids in the bacterial cytoplasm, thus killing the bacteria. It exerts bactericidal effect by fixing cellular membrane proteins.

ClO_2 oxidizes volatile sulfur compounds (VSCs) that causes halitosis and destroy amino acids such as cysteine and methionine which are VSCs precursor. VSCs are produced by gram-negative anaerobic bacteria. Oxygen produced by ClO_2 maintains the amount of oxygen in the saliva. Anaerobic bacteria cannot survive with the presence of oxygen. In addition, the oxygen contained in ClO_2 is one of the sources of antioxidants that can be used in the treatment of periodontal diseases.

Advantages over Chlorhexidine:

Chlorhexidine is the most prescribed oral rinse for the past 50 years to control plaque and prevent infection. Chlorhexidine in higher concentration kills the bacteria and in lower concentration, inhibit the growth of bacteria. Two concentrations, namely, 0.2% and 0.12% have been used in mouthwash. It is considered as gold standard antimicrobial because of broad-spectrum activity and substantivity.

Chlorhexidine is recommended for short term use. Higher concentration and long term use of chlorhexidine can cause discolouration of the teeth, impairment of taste and slight increase in supragingival calculus formation. In vitro studies confirmed that chlorhexidine can adversely affect gigingival fibroblast that delays wound healing. To overcome these side effects chlorine dioxide oral rinse is introduced in the market. It is used as an alternative to chlorhexidine for its safe and effective antimicrobial action.

Unlike chlorhexidine, Chlorine dioxide is free from staining, does not impair taste or interfere with fibroblastic and osteoblastic activity during healing. Chlorine dioxide is approved by US Food and Drug Administration (FDA) as an antimicrobial agent and its low toxicity suggest that ClO_2 is very safe for daily use.