Review Article

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SEA SALT MOUTHRINSE: A NOVEL THERAPEUTIC APPROACH FOR ORAL HEALTH

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ABSTRACT:

Microbial driven dental plaque is key component factor in gingivitis and periodontal disease and a prerequisite for the development of systemic diseases, these interpretations opened a new field of investigatation on prevention of dental disease. A range of antiboitics and antiseptics have been an engaged as adjuncts to conventional therapies to restrain bacterial pathogens, chemical plaque control could prevent or reverse gingival diseases. However there are lot of side effects associated with long term use of alcohol based mouthrinse; this article explores the possibility and potentials of sea salt based mouthrinse in oral health.

Keywords: Sea Salt, Mouthrinse, Plaque.

INTRODUCTION:

Dental Biofilm: A microbial community

Biofilms are ubiquitous; they form on virtually all surfaces immersed in natural aqueous environments. Biofilms form particularly fast in flow systems where a regular nutrient supply is provided to the bacteria. The reason for the existence of the biofilm is that it allows the micro-organisms to stick and to multiply on surfaces. Micro-organisms undergo a wide range of physiological and morphological adaptations in response to environmental changes. In biofilms, different gradients of chemicals, nutrients and oxygen create micro-environments to which micro-organisms must adapt to survive.

The perception and processing of chemical information from the environment form a central part of the regulatory control of these adaptive responses. Adaptation to a biofilm lifestyle involves regulation of a vast set of genes, and the micro-organisms are thus able to optimize phenotypic properties for the particular environment. Consequently, biofilm micro-organisms differ phenotypically from their planktonic counterparts. [1] A biofilm environment confers certain properties such as structure of biofilm, exoplysaccharides, physiological heterogeneity, antibiotic resistance, quorum sensing and gene transfer that are not seen in the nomadic state, a fact that explains the importance of recognizing dental plaque as a biofilm and not as bacteria in the planktonic state. [2]

Oral Systemic Link: Bidirectional Relationship

The mouth acts as a window to lot of systemic diseases and serves as a port of entry of the various infections that can alter

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and affect the immune status of the person. The oral cavity has the potential to harbor at least 600 different bacterial species, and in any given patient, more than 150 species may be present, surfaces of teeth can have as much as billion bacteria in its attached bacterial plaque. [3] Periodontitis has been proposed as having an etiological or modulating role in cardiovascular, cerebrovascular disease, diabetes, respiratory disease and adverse pregnancy outcome; several mechanisms have been proposed to explain or support such theories.

One of these is based around the potential for the inflammatory phenomenon of periodontist to have effects by the systemic dissemination of locally produced mediators such as C-reactive protein (CRP), interleukins -1 beta (IL-1β) and -6 (IL-6) and tumor necrosis factor alpha (TNF-α). [4] Periodontal diseases are recognized as infectious processes that require bacterial presence and a host response which are further affected and modified by other local, environmental, and genetic factors. The oral cavity works as a continuous source of infectious agents, and its condition often reflects the progression of systemic pathologies as illustrated in Figure 1. Periodontal infection happens to serve as a bacterial reservoir that may exacerbate systemic diseases. [5]

Plaque Control: Key to Success

Dental plaque biofilm cannot be eliminated. However, the pathogenic nature of the dental plaque biofilm can be reduced by reducing the bioburden (total microbial load and different pathogenic isolates within that dental plaque biofilm) and maintaining a normal flora with appropriate oral hygiene methods. [1] Since the 1960s when Löe et al [6] established the essential role of dental plaque as the etiological agent responsible for periodontal disease, the control of biofilm accumulation on teeth has been the key to periodontal disease prevention. Tooth brushing and the use of dental floss and other devices to remove bacterial plaque from the teeth are the most common ways of removing biofilm. Despite its important role in the control of periodontal disease, mechanical plaque control is not properly practiced by most individuals. A systemic review of the effectiveness of self-performed mechanical plaque removal in subjects with periodontal disease concluded that it had limitations. [7] Therefore, adjunctive use of chemical plaque control might be beneficial.

There has been a vigorous search for many years for chemical agents that could supplement or even supplant patient – dependent mechanical plaque control and thus reduce or prevent oral disease. Meta-analyses have indicated that oral care products containing chlorhexidine exert anti-plaque effects. Chlorhexidine is a cationic biguanide with a broad spectrum of antibacterial activity, encompassing Grampositive and Gram-negative bacteria, yeasts and some viruses. [8] But with scientifically proven side effects associated with chlorhexidine (CHX) i.e. temporary loss of taste; staining of teeth, restorations, and mucosa; dryness and soreness of mucosa; bitter taste; and slight increase in supragingival calculus formation, newer tissue friendly mouth rinses needs to be

evaluated. However, topical chlorhexidine therapy is not without its problems, and hypersensitivity reactions to the agent have been reported. Hypersensitivity to chlorhexidine is rare, but its potential to cause anaphylactic shock is probably underestimated. IgE antibodies against chlorhexidine have been detected in the majority of sera from a small group of predominantly Japanese individuals showing anaphylactic-type adverse reactions to chlorhexidine. In Japan, therefore, the use of chlorhexidine at a concentration effective for oral care has been banned. [9]

Sea Salt Mouthrinse: The Future outlook

The recent past has witnessed resurgence in the use of sea salt based oral products especially the mouthrinse; the main application of sea salt is natural antibacterial protection for the tooth enamel. Consumers who gravitate toward using sea salt based products often view these products as being safer than conventional products. As popularity of sea salt based Mouthrinse continues to rise, dental professionals are in position to provide information to patients and consumers about these products safety and efficacy; this can be difficult, however, owning to a lack of professional consensus on the subject.

It depicts that salt water rinses are superior because they alkalinize the mouth (opposite of acidify, which is what the bacteria create) and the alkalinity helps in reducing the bacteria count because they like an acid environment. Additionally, salt water is astringent and speeds wound healing through reducing inflammation and contracting the tissues.

H_2Ocean Inc. produces a wide range of quality dental products that uses sea salt. H2Ocean mouthrinse are alcohol and fluoride free and are the only sea salt based oral rinse with enzymes naturally found in saliva. H_2Ocean's oral rinse formulas are enriched with the ingredient xylitol which helps prevent dry mouth. As per manufacturer's guidelines twice daily use of one cap full of H2Ocean oral rinse and swish thoroughly for 30 seconds. The key benefits for these products also include non staining, alcohol free, non-irritating and no taste alterations.

The key ingredient of two commercially available sea salt based H2Ocean mouthrinse are illustrated in table 1.

CONCLUSION:

To date, an insufficient amount of clinical trials on sea salt based mouth rinses has been reported, which is in stark contrast with a plethora of such for conventional oral care products. In, addition as only a limited number of studies on sea salt based products have been published, it has not been determined whether they are superior or equivalent to conventional oral care products in improving oral health. More scientific studies and clinical trials will further prove the beneficial effect of sea salt mouthrinse and its vital role in oral health.

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TABLES:

Table 1: Key Ingredients for H2Ocean Sea Salt Mouthrinse

Sr. No	H2Ocean mouthrinse	Key Ingredients
1	Arctic Ocean Sea Salt Oral Rinse	Purified Water, Sea Salt, Xylitol, Natural Flavor, Lysozyme, Menthol, Potassium Sorbate, Sodium Benzoate, Poloxamer 407
2	Lemon Ice Sea Salt Oral Rinse	Purified Water, Glycerin, Natural Flavor, Sea Salt, Xylitol, Phytic Acid, Potassium Citrate, Menthol, Zinc Gluconate, Lysozyme, Poloxamer 407.

FIGURES:

Figure 1: Oral-Systemic Link