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PRELIMINARY SYNTHESIS OF CALCIUM CARBONATE USING CO2 BUBBLING METHOD FOR BIOMEDICAL APPLICATION
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Mechanism Of Zinc In Oral Cavity For Reducing Enamel Demineralization (Literature Study Article)

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ABSTRACT

Zinc [Zn²⁺] is an element which is found in many parts of the human body including oral cavity. This element is present naturally in plaque, saliva, and enamel. Furthermore, zinc can also be formulated into oral health products as antibacterial agents for instance mouthrinses and toothpastes, yet their mechanism of interaction with enamel is not clearly understood. The purpose of this literature study is to understand the mechanism of zinc in oral cavity for reducing enamel demineralization. Zinc is formulated into oral health products to control plaque, reduce malodour, and inhibit calculus formation. It has good oral substantivity, and high concentrations can retain for many hours in plaque and saliva following delivery from mouthrinses and toothpastes. Although low concentrations of zinc can minimize enamel demineralization and modify remineralization very well, during caries clinical trial, the addition of zinc to fluoride toothpastes has not affected its ability to reduce caries. Zinc competes with calcium for bacterial binding sites in biofilms and it has been proposed that half of the bound zinc would be released under cariogenic conditions, through, for example, protonation of carboxylate and phosphate in bacterial lipoteichoic acid. The mechanism of zinc in oral cavity for reducing enamel demineralization is by reducing calcium [Ca²⁺] and phosphate ions [PO₄³⁻] release, mainly on the enamel surfaces at PO₄³⁻ sites in the HAp lattice to possibly form an α-hopeite-like phase.

Keywords: mechanism, zinc, enamel, antibacterial, demineralization

INTRODUCTION

Zinc [Zn²⁺] is an element which is ubiquitous in human body including oral cavity. This element is present naturally in plaque, saliva, and enamel. Zinc is also added to oral