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Research Article

COMPARISON OF CAESIN PHOSPHOPEPTIDE - AMORPHOUS CALCIUM PHOSPHATE AND TRICALCIUM PHOSPHATE ON RELEASE OF CALCIUM IN SALIVA: IN VIVO STUDY

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ABSTRACT

Clinical trials of remineralizing agents have shown that the remineralizing agent is non-cariogenic and has anticariogenic effect. Remineralisation agents may be an excellent delivery vehicle for safe and additive, capable of promoting enamel remineralisation. Casein phosphopeptide amorphous calcium phosphate (CPP-ACP) nano complexes have shown to remineralize enamel subsurface lesions in situ. This study was conducted to compare the casein phosphopeptide - amorphous calcium phosphate and tricalcium phosphate (TCP) on release of calcium in saliva. Unstimulated saliva from 30 subjects was collected. The remineralizing agent containing CPP-ACP and tricalcium phosphate were applied for 3 minutes in each subject. Their saliva samples were collected and assessed for calcium concentration using affiliated reagent kits and Mispa plus biochemical analyser. Data obtained were analysed using student's paired t test. Significant difference was found in the calcium concentration of saliva before and after application of CPP-ACP and tricalcium phosphate (TCP) containing cream. The calcium concentration in saliva was more after application of CPP-ACP than TCP.

INTRODUCTION

Dental caries is one of the most common and preventable diseases of childhood. The process of caries formation is a cycle of remineralization and demineralization with various stages being either reversible or irreversible (Ruchi Vashisht *et al.*, 2013). The concept of preventive dentistry provides the foundation for demineralization and remineralization. Remineralizing cream have the potential of being an effective vehicle for delivering therapeutic agents because they permit protracted contact of the agent with the teeth with minimal efforts on the part of patient. The non-invasive treatment of early caries lesions by remineralization is a major advantage in clinical management and researchers have investigated the low cariogenic potential and possible cariostatic activity of dairy products such as milk, casein, caseinates, and cheeses (Carounanidy *et al.*, 2010). Recently, casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) derived from milk protein casein has been reported to reduce demineralization of the tooth structure and enhance remineralization. The anticariogenic potential and remineralizing effects have been shown *in vitro* and *in situ* studies (Reynolds, 1995, 1997, 1998). CPP-ACP provides a highly effective means for elevating calcium levels in dental plaque fluid, something which is desirable for enhancing remineralization (Reynolds *et al.*, 2003). Tricalcium phosphate has also been considered as one possible means for enhancing levels of calcium in plaque and saliva. Both the agents depends on calcium and phosphate compounds and their effect is mainly based on an enhancement of the natural capacity of saliva to remineralize mineral loss (Reynolds, 2008). Hence the purpose of this study was to compare the release of calcium pre and post application of the remineralizing agent and to