

[1]喻明玲,林居红,胡贇.酪蛋白磷酸肽-无定形磷酸钙对酸蚀牙釉质显微硬度的影响[J].第三军医大学学报,2013,35(02):138-141.

Yu Mingling, Lin Juhong, Hu Yun. Effect of casein phosphopeptide-amorphous calcium phosphate on microhardness of eroded enamel[J]. J Third Mil Med Univ, 2013, 35(02): 138-141.



酪蛋白磷酸肽-无定形磷酸钙对酸蚀牙釉质显微硬度的影响

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Title: Effect of casein phosphopeptide-amorphous calcium phosphate on microhardness of eroded enamel

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关键词: [牙酸蚀症](#); [酪蛋白磷酸肽-无定形磷酸钙](#); [显微硬度](#); [再矿化](#)

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摘要: 目的 用显微硬度测量法研究酪蛋白磷酸肽-无定形磷酸钙(casein phosphopeptide-amorphous calcium phosphate, CPP-ACP)对碳酸饮料酸蚀后的牙釉质的再矿化作用。 方法 收集临床拔除的第三磨牙共15颗,制成牙釉质样本30个,完全随机分为:去离子水组(阴性对照组)、CPP-ACP组(实验组)、氟保护漆组(阳性对照组),每组10个样本。各组样本分别用可口可乐酸蚀,7次/d,每次2 min,8 h内完成,共7 d,然后分别进行再矿化处理。去离子水组置于去离子水中,不做其他处理;CPP-ACP组和氟保护漆组分别用CPP-ACP和氟保护漆处理。分别在酸蚀前、酸蚀后和再矿化后用维氏显微硬度计测定釉质表面硬度并进行扫描电镜观察。 结果 经可口可乐酸蚀后的牙釉质表面硬度值较酸蚀前有明显下降($P<0.05$);经再矿化处理后, CPP-ACP组和氟保护漆组牙釉质表面硬度值与去离子水组相比均有统计学差异($P<0.05$); CPP-ACP组和氟保护漆组之间的差异有统计学意义($P<0.05$)。扫描电镜观察结果显示: CPP-ACP组和氟保护漆组经过再矿化处理后,脱矿釉质表面有矿物质沉积。 结论 CPP-ACP能促进钙盐沉积于脱矿釉质表面而提高酸蚀牙釉质的显微硬度,显著促进酸蚀釉质再矿化。

Abstract: Objective To investigate the remineralization potential of casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) on the surface

microhardness of human enamel eroded by a carbonated soft drink.

Methods Fifteen third molars were collected at clinic and were processed into 30 enamel slabs. The enamel slabs were randomly divided into 3 groups ($n=10$): deionized water group, CPP-ACP group, and fluoride vanish group. Each specimen was first immersed in a Coca-Cola drink for 2 min, 7 times a day for 7 d. Then the specimens were subjected to 3 different remineralization protocols, deionized water, CPP-ACP and fluoride vanish. Vickers microhardness (SMH) measurements were obtained at baseline, after the Coca-Cola drink erosion, and after remineralization stage. The enamel specimens were analyzed by scanning electron microscopy (SEM).

Results Enamel hardness was significantly decreased after immersion in a Coca-Cola drink ($P<0.05$). The SMH of the enamel slab treated with CPP-ACP and fluoride vanish was significantly increased compared with that of the negative control ($P<0.05$), and there was significant difference between the 2 former groups ($P<0.05$). SEM demonstrated that there were lots of minerals deposited on the surface of enamel of CPP-ACP and fluoride vanish groups.

Conclusion CPP-ACP promotes minerals to deposit on the demineralized enamel surface to increase the SMH of the eroded human enamel, showing the remineralization potential.

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