

马尾松针提取物抑制根面牙本质脱矿的理化性能研究

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【摘要】目的 研究不同浓度马尾松针提取物 (PMNE) 对牙本质脱矿的理化性能影响, 为 PMNE 抑制根面龋的研究提供实验依据。**方法** 将离体牙根部牙体组织块分别放到去离子水 (DDW)、氟化钠 (NaF)、4%PMNE、8%PMNE 及 12%PMNE 等 5 个组, 每组 10 个试件 ($n=10$)。在 37℃ 条件下, 各组试件经实验溶液、酸性缓冲液 (pH5.0) 和中性缓冲液 (pH7.0) 组成的 pH 循环, 一天 3 次, 共 8 天。用显微硬度计测定脱矿前后的牙体表面显微硬度差值 (Δ SMH), 电感耦合等离子体原子发射光谱仪测定并计算酸性缓冲液中的钙离子释出率 (CDR)。**结果** PMNE 组 CDR 均显著低于 DDW 组, 显著高于 NaF 组 ($P<0.05$), 且 8%PMNE 组 CDR 显著低于 4%PMNE 组 ($P<0.05$); 各 PMNE 组 Δ SMH 均显著低于 DDW 组 ($P<0.05$), 且 8%PMNE 组 Δ SMH 略高于 NaF 组, 但无统计学意义 ($P>0.05$), 两者均显著低于 4% 和 8%PMNE 组。**结论** PMNE 溶液可抑制根面牙本质脱矿, 减缓其表面硬度的降低, 且 8% 浓度组效果较佳。

【关键字】 马尾松针提取物 根面龋 牙本质 脱矿

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The physicochemical study on effect of pinus massoniana needle extract in inhibiting root dentin demineralization *in vitro*

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【Abstract】Objective To study the effect of pinus massoniana needle extract (PMNE) at different concentrations on the physical and chemical properties of root dentin, and to explore the mechanism which PMNE inhibits root surface caries. **Methods** Root tooth blocks were randomly divided into 5 groups, and immersed into distilled deionized water (DDW), sodium fluoride (NaF), 4%PMNE, 8%PMNE, or 12% PMNE ($n=10$ for each group). All samples were treated with pH cycling for 8 days, consisting of experimental solution, acidic buffer, and neutral buffer, at a frequency of 3 times per day. The D-value of surface micro-hardness (Δ SMH) before and after pH cycling was determined using Vickers hardness tester, and the calcium depletion rate (CDR) in acid buffer was measured by inductively-coupled plasma atomic emission spectrometer. **Results** The CDR of all PMNE groups was lower than that of DDW group and was higher than that of NaF group ($P<0.05$), and the CDR of 8% PMNE group was lower than that of 4% PMNE group ($P<0.05$). The Δ SMH of 4%, 8%, and 12% PMNE groups was lower than that of DDW group ($P<0.05$), but Δ SMH was similar between the 8% PMNE group and the NaF group ($P>0.05$), both of which had lower Δ SMH than 4% and 12% PMNE groups. **Conclusions** PMNE solution can inhibit

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