不同膨胀系数石膏模型材料对基托树脂力学性能的影响

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【摘要】 **目的** 研究不同膨胀系数石膏模型材料对基托树脂力学性能的影响。**方法** 采用高、中、低3种不同膨胀系数的石膏模型材料包埋型盒，分别制作树脂基托试件，通过测量试件的冲击强度，弯曲强度，弹性模量和硬度，分析树脂试件的力学性能，用扫描电镜观察试件的表面及横断面结构。**结果** ①高、中、低膨胀系数石膏模型材料制作试样的冲击强度分别为：（5.79 ±0.90）KJ · m^{-2}、（7.21±0.16）KJ · m^{-2} 和（8.89±0.58）KJ · m^{-2}；弯曲强度分别为：（71.03±2.23）MPa、（85.18±5.32）MPa 和（110.06±4.06）MPa；弯曲模量分别为：（2797±83）MPa、（2512±88）MPa 和（2088±42）MPa；硬度（洛氏）分别为：16.30±0.35，20.50±0.38，26.80±0.14，各组数据之间的差异具有显著的统计学意义（P<0.01）。扫描电镜观察发现：高膨胀系数石膏制作的试样表面颗粒排列紊乱、孔隙较多，横断面气泡较多，结构疏松；低膨胀系数组的树脂试样表面颗粒排列整齐，孔隙较少，横断面气泡明显减少，结构致密；中膨胀系数组的表现介于两者之间。**结论** 低膨胀系数石膏模型材料制作的树脂基托力学性能最佳。

【关键词】 石膏 冲击强度 弯曲强度 弹性模量 硬度 膨胀系数

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Effects of plaster cast materials with different expansion coefficient on mechanical properties of denture base resin

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【**Abstract**】 **Objective** To evaluate the influence of the plaster cast materials with different expansion coefficient on mechanical properties of denture base resin. **Methods** Three kinds of plaster cast materials with high, medium and low expansion coefficient were embedding in molding flask. 5 specimens with different dimension were made for measuring impact strength, flexural strength and flexural modulus and hardness. Moreover, the surface morphology and cross section structure was observed by scanning electron microscopy. **Results** The impact strength of plaster cast materials with high, medium and low expansion coefficient were respectively 5.79 ±0.90KJ·m^{-2}, 7.21±0.16 KJ·m^{-2} and 8.89±0.58KJ·m^{-2}. The flexural strength were respectively 71.03±2.23MPa, 85.18±5.32MPa and 110.06±4.06MPa; the flexural modulus were respectively 2797±83MPa, 2512±88MPa and 2088±42MPa; and the hardness was respectively 16.30±0.35，20.50±0.38，26.80±0.14MPa. There were statistically significant difference among three groups (P<0.01). Through scanning electron microscopy, we observed that the particles arranged in disorder and there was a lot of pore on the surface of the resin sample made

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