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可降解镁植入材料表面涂层的制备及其性能

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摘 要：采用浸涂法制备Mg植入材料表面聚乳酸涂层，通过选择不同相对分子质量的聚乳酸并采用硅烷偶联剂对Mg植入材料表面进行预处理，提高Mg植入材料与聚乳酸的结合力。利用扫描电镜得出浸涂时间、聚合物浓度及浸涂次数对涂层厚度的影响。发现Mg植入材料表面涂覆相对分子质量为20万的聚(乳酸-羟基乙酸)能够满足降解条件和结合力的要求。经聚乳酸表面处理的试样在Hank's 溶液中浸泡10 d后，计算试样质量损失，发现表面处理后的试样质量损失明显降低。实验表明，镁表面涂覆聚乳酸涂层，可以有效提高其在模拟体液中的耐蚀性。

关键字： 浸涂；Mg植入材料；结合力；耐蚀性

Preparation and property of coating on degradable Mg implant

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Abstract: To be an implant material, it is necessary to have good corrosion resistance for magnesium and magnesium alloy in the period of tissue healing process. To improve corrosion resistance of pure magnesium, dipping technology was employed in the present work to prepare the poly (lactic acid) coating on Mg implant. Different molecular mass poly (lactic acid) and a surface pretreatment technology applying silane coupling agents on Mg implant was used to improve adhesion strength between Mg implant and poly lactic acid. Scanning electron microscopy (SEM) was used to gain the effect of dipping time, polymer concentration and dipping times for the thickness of coating. The results show that poly (DL-lactide-co-glycolide) (PLGA) with relative molecular mass of 200 thousand can meet the need of degradation condition and strength adhesion of biodegradable implant. The mass loss of PLGA film coated Mg implant is decreased obviously after they are immersed in Hank's solution. It can be concluded that PLGA coating can effectively protect magnesium from corrosion in simulation biology solution.

Key words: dipping technology; Mg implant; adhesion strength; corrosion resistant

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