释放率,不愧为一种解决目前国内材料短缺问题的新途径。

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参 考 文 献

1 Koosha, Uller RH, Davis SS. Polyhydroxybutyrate as a drug carriers. *Critical Reviews in Therapeutic Drug Carrier Systems*, 1989, **6**(2): 117

2 陈建海, 陈志良. 地西泮-聚 3-羟基丁酸酯为载体的缓释微球研制. 第六届全国生物材料学术研讨会论文集. 1999. 57(广州)

3 Jun HW, Lai JW. Preparation and *in vitro* dissolution tests of egg abumin microcapsules of nitrofurantoin. *Int J Pharm*, 1983, **16**: 65

4 Leenslag JW, Pennings AJ, Bos RRM, *et al*. Resorbable materials of poly(L-lactide). *Biomaterials*, 1987, **8**: 70

5 陈建海. DL-PLA, L-PLA 与 PCL 的酯交换. 功能高分子学报, 1990, **13**(4): 58

Study on the Drug Release of Diazepam-Poly(hydroxybutyrate-hydroxyvalerate)/Poly(lactic acid) Sustained-Release Microspheres

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Abstract The sustained-release microspheres have been prepared by the solvent-evaporation methods, using poly(hydroxybutyrate-co-hydroxyvalerate)/polylactide blend as carrier and diazepam as modal drug. The mean diameter of microspheres is in a range of 18~25 μm. The change of surface morphology with the composition of carrier was observed by scanning electron microscope. In this paper, drug loading and incorporation efficiency vary with the composition of carrier for four kinds of microspheres, which was also discussed. The release properties could be expressed by the following equation: $Q = 2.1811t + 13.50$ ($r = 0.9527$). These materials have good prospect as a controlled or sustained- release carrier.

Key words Poly(hydroxybutyrate-co-hydroxyvalerate); Diazepam; Sustained-release; Microspheres

【文摘 004】胰岛素聚乳酸微球处方筛选 胡 一桥, 郭 建新, 郑梁元, 谭仁祥. 中国药学杂志, 1999, **34**(12): 822

目的:选择胰岛素作为蛋白质模型药物,以聚乳酸为载药聚合物,采用溶剂挥发法,对蛋白质的微球处方及制备条件进行优化。方法:以微球的成球情况、粒径、包封率、产率、含量为指标,首先应用正交设计分析筛选油相、乳化剂、乳化温度和溶剂挥发温度,然后应用均匀设计逐步回归法优化空白微球制备工艺;再根据空白微球的筛选结果,对聚乳酸相对分子质量和浓度两个重要因素进行正交试验,应用理想函数优选产率、包封率和载药量较高的胰岛素聚乳酸微球。应用电子显微镜扫描观察微球水解前后的表面形态。应用显微计数法测定微球粒径及分布。结果:空白微球筛选结果表明以液体石蜡为油相,山梨醇酯肪酸酯-80 为乳化剂,在室温条件下进行乳化和溶剂挥发有利于微球的制备。均匀设计及逐步回归法筛选空白微球的制备工艺结果表明,聚乳酸的浓度和相对分子质量是决定粒径大小和微球产率的主要因素。载药微球筛选结果表明相对分子质量为 10 kD 的聚乳酸当其浓度为 200300 $mg \cdot ml^{-1}$ 时制备得到的微球包封率(达 75%以上)、含量、产量都较高。胰岛素聚乳酸微球平均粒径为 19.39 μm,表面光滑,呈球状,在水解 15 d 后表面出现孔隙,但球形骨架仍然完整。结论:采用一系列优选方法所得优化处方及制备条件具有可重复性,且与预测值基本吻合,优选方法正确、可行。