

论文

茶多酚锰-壳聚糖微球的制备、控释和诱导肝癌细胞凋亡的研究

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摘要:

选用壳聚糖为微米粒包被材料, 制备茶多酚锰(Tea Polyphenol Manganese, TPMn)-壳聚糖微球. 用荧光显微技术研究了TPMn-壳聚糖微球的荧光特性, 用扫描和透射电子显微镜证实TPMn-壳聚糖微球尺寸和分布规律. RP-HPLC定量分析TPMn-壳聚糖微球包封率为68%, 符合微米级微粒控释药物包封率的要求. 动力学研究结果表明, 茶多酚(TP)-壳聚糖和TPMn-壳聚糖的微球均有控释TP的能力, 控释时间高达40 h以上, 但前者释放速率稍快于后者. TPMn和TPMn-壳聚糖微球均能诱导肝癌细胞凋亡, 但TPMn-壳聚糖微球诱导肿瘤细胞的凋亡速率稍高于TPM. 实验结果证实, 以TPMn-壳聚糖微球方式控释TPMn有利于提高诱导肿瘤细胞凋亡速率. TPMn-壳聚糖微球具有研发成注射型抗肿瘤新药的可能性.

关键词: 茶多酚锰-壳聚糖微球 理化特性 控释 肝癌细胞 凋亡

Preparation, Release-control and Cell Apoptosis of Liver Cancer in the Tea Polyphenol Manganese Loaded on a Chitosan Microparticles

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Abstract:

The chitosan as a wrapping material was selected to prepare a microparticles of tea polyphenol manganese-chitosan(TPMn). Fluorescence characteristics of TPMn-chitosan microparticles was revealed by fluorescence microscopy. Size and distribution orderliness of TPMn-chitosan microparticles was further approved by the scanning electron microscopy and the transmission electron microscopy, respectively. The envelopment ratio of TPMn-chitosan microparticles was calculated to be 68% by RE-HPLC approach, which is in accordance with the ratio request of release-controlled drug at the micron level of microparticles. The results of kinetic studies show that two chitosan microparticles loaded on both tea polyphenol(TP) and TPMn, respectively, have capacity for controlling-release TP for exceeding 40 h, but this rate in TP microparticles was somewhat quicker than that of TPMn microparticles. Even so, both microparticles have capacity for inducing cells of liver cancer apoptosis, but this apoptosis rate by TPMn-chitosan microparticles was somewhat higher than that by TP-chitosan microparticles. The experimental results prove that the TPMn-chitosan microparticles was propitious to release and control TPMn for enhancing the apoptosis rate of tumour cell induced. TPMn-chitosan microparticles would have a potential for developing a new injecting drug for antitumor.

Keywords: TPMn-chitosan microparticles Characteristics of physical chemistry Controlling-release Cell of liver cancer Apotosis

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