

论著

99Tcm-annexin V 在肺癌化疗评估中的应用

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收稿日期 2008-3-19 修回日期 网络版发布日期 2008-11-9 接受日期

摘要 摘要: 目的 制备放射性药物⁹⁹Tcm-annexin V, 评估其在早期预测肺癌化疗效果中的作用。方法 通过毕赤酵母重组表达、硫酸铵沉淀和分子筛层析纯化得到annexin V, 采用氯化亚锡还原法在annexin V的氨基端标记放射性核素⁹⁹Tcm, 经脱盐柱纯化获得标记产物。采用薄层层析测定⁹⁹Tcm-annexin V的标记率和放射性化学纯度, 外露磷脂酰丝氨酸的红细胞测定⁹⁹Tcm-annexin V的生物活性。通过在615小鼠腋部皮下接种LA795细胞和组织插块法获得荷肺癌小鼠模型, 经腹腔注射环磷酰胺治疗肺癌后6、12、24和48h测定⁹⁹Tcm-annexin V在小鼠体内的分布情况。结果 毕赤酵母工程菌株分泌表达annexin V, 经硫酸铵分级沉淀和分子筛层析纯化后annexin V得以有效回收。室温下30min完成anne-xinV的⁹⁹Tcm标记, 标记率为50.2%。⁹⁹Tcm-annexinV放射性化学纯度为93.9%, 其生物活性保存良好。生物分布实验表明, ⁹⁹Tcm-annexinV通过肾脏排泄。615荷肺癌小鼠模型经过环磷酰胺化疗后48h, ⁹⁹Tcm-annexin V在肿瘤组织的摄取达到最高, 肿瘤/肌肉放射性摄取率之比为6.34, 肿瘤/血液放射性摄取率之比为4.09。结论 制备了毕赤酵母来源的⁹⁹Tcm-annexin V, 有可能应用于早期预测肺癌化疗效果。

关键词 [99Tcm-annexin V](#); [肺癌](#); [环磷酰胺](#); [LA795](#); [生物分布](#)

分类号

Application of ⁹⁹Tcm-annexin V in Predicting the Therapeutic Effect of Chemical Agent on Lung Cancer

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Abstract ABSTRACT: Objective To prepare ⁹⁹Tcm-annexin V and evaluate its application in the early prediction of therapeutic effect of chemical agent on lung cancer. Methods Annexin V was obtained by recombinant pichia pastoris expression, ammonium sulfate precipitation, and size-exclusion chromatography. The purified protein was labeled with ⁹⁹Tcm at the N-terminal site by stannous chloride reduction and purified by desalting. The labeling yield and radiochemical purity of ⁹⁹Tcm-annexin V were determined by instant thin-layer chromatography. The biological activity of ⁹⁹Tcm-annexin V was tested by phosphatidylserine-exposed erythrocytes bound radioactivity counting. The lung cancer mice models were established by inoculating LA795 cells to right flank of 615 mice subcutaneously and tumor tissue transplantation. The biodistribution of ⁹⁹Tcm-annexin V in lung cancer mice models were investigated at 6, 12, 24, and 48 h after cyclophosphamide administration. Results The annexin V was secreted from pichia pastoris and purified by ammonium sulfate precipitation and size-exclusion chromatography with high yield. The annexin V could be labeled at room temperature with 50.2% radioactivity yield. The radiochemical purity of ⁹⁹Tcm-annexin V reached up to 93.9% with intact biological activity. The biodistribution analysis demonstrated that ⁹⁹Tcm-annexin V was excreted from kidney. The uptake of ⁹⁹Tcm -anne-xin V at tumor reached maximum 48 h after cyclophosphamide administration while tumor to muscle ratio was 6.34 and tumor to blood ratio was 4.09. Conclusions ⁹⁹Tcm -annexin V derived from pichia pastoris was successfully prepared. It is useful in predicting the therapeutic effect of chemical agent on lung cancer.

Key words [99Tcm-annexin V](#) [lung cancer](#) [cyclophosphamide](#) [LA795](#) [biodistribution](#)

DOI: 10.3881/j.issn.1000-503X.2008.05.018

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