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论文

131I-rMIF荷瘤小鼠体内生物学分布及肿瘤靶向性研究

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摘要:

目的 研究放射性碘131标记基因重组巨噬细胞移动抑制因子(recombinant macrophage migration inhibition factor, rMIF)在荷瘤小鼠体内分布及肿瘤靶向性，为肿瘤早期诊断提供新的制剂。方法 利用Iodogen(四氯二苯基甘脲)法放射性碘131标记rMIF(131I-rMIF)，体外研究肝癌细胞系H22对该制剂的摄取；小鼠尾静脉注射131I -rMIF，研究其在H22荷瘤小鼠的生物学分布特征及放射自显影特征。结果 成功制备了131I -rMIF，生物学活性良好。标记率87.34%，放化纯94.95%。室温放置48h仍保持稳定。在0.5、1、2和4h时，肝癌细胞H22对131I-rMIF的摄取率均明显高于对Na131I的摄取率(P<0.05)。生物学分布研究表明,小鼠尾静脉注射131I-rMIF后，肝、肾的放射性较高，其他脏器放射性较低。荷瘤模型在注射后1、3、6、24h肿瘤/对侧肌肉(T/NT)的放射性比值分别为2.701±0.230、3.931±0.281、4.242±0.111和3.587±0.241。荷瘤鼠的放射自显影显像显示131I-rMIF注射后6h后可以在肿瘤部位明显浓聚。结论 131I -rMIF标记物稳定，标记率高，在荷肝癌小鼠中肿瘤靶向性分布明显，值得进一步研究。

关键词: 巨噬细胞移动抑制因子; 放射性核素; 生物学分布; 肝癌; 小鼠

Biodistribution and tumor targeting of 131I-rMIF in tumor-bearing mice

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Abstract:

Objective To evaluate biodistribution and tumor targeting of 131I-labeled recombinant macrophage migration inhibition factor(rMIF) in tumor-bearing mice, and to provide an imaging marker for early diagnosis of hepatocellular carcinoma. Methods MIF was labeled with 131I using Iodogen method and the labeled rate and stability were identified with paper chromatography. The specific binding with hepatocellular carcinoma H22cells in vitro was analyzed by cells uptake assay. Biodistribution and tumor targeting were analyzed after injection of 131I-rMIF through the tail vein in tumor bearing mice. Results 131I-rMIF, with a good bioactivity, was successfully prepared. The labeled rate of 131I-rMIF was 87.34%, radiochemical purity was 94.95%, and the stability was good. The uptake of 131I-rMIF by tumor cells was much higher than that of the controls (free Na131I) in 0.5, 1, 2 and 4h (P<0.05). 131I-rMIF was mainly metabolized through the liver and kidney. And higher radioactivity was detected within tumors (target). T/NT (target-to-non-target) ratios were 2.701±0.230, 3.931±0.281, 4.242±0.111 and 3.587±0.241 at 1, 3, 6 and 24h after injection, separately(P<0.05). The result of autoradiography showed that 131I-rMIF could be specifically localized in tumors after 6h. Conclusion 131I-rMIF, with good stability, good labeled ratios and rapid targeted distribution in tumor cells, may be used for detection of hepatocellular carcinoma.

Keywords: Macrophage migration inhibition factor; Radioisotope; Biodistribution; Hepatocellular carcinoma; Mice

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