

研究报告

# <sup>99</sup>Tc<sup>m</sup>-EGF的直接法合成及其在荷C6动物体内生物学分布

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## 摘要

探索用<sup>99</sup>Tc<sup>m</sup>直接标记表皮生长因子(EGF)的方法并研究其在荷C6动物体内的生物学分布特点。巯基乙醇(20 mL/L) 10 μL还原EGF(2.5 μg); 含0.5 μg SnCl<sub>2</sub>的亚甲基二膦酸盐(MDP)溶液将还原高价得使之与还原EGF的巯基结合, 放化纯度大于95%, 标记物稳定性较好, 在6 h内放化纯度大于95%。通过内皮细胞培养进行<sup>99</sup>Tc<sup>m</sup>-EGF的生物活性鉴定, 显示EGF在钼标记前后生物学活性未见明显改变(P>0.05)。<sup>99</sup>Tc<sup>m</sup>-EGF在荷瘤鼠体内生物学分布显示肝、脾、肾等组织放射性分布较高, 瘤区放射性较高, 而脑组织最低, 4 h瘤与正常组织放射性摄取比值(Tumor/Normal Tissue)为2.25, SPECT全身显像显示瘤组织放射性核素浓聚。因此直接合成的<sup>99</sup>Tc<sup>m</sup>-EGF可望成为特异性诊断高表达EGFR肿瘤的SPECT分子显像剂。

## 关键词

[表皮生长因子](#) [表皮生长因子受体](#) [<sup>99</sup>Tc<sup>m</sup>O<sub>4</sub>](#) [放射性标记](#)

分类号 [R817.4](#)

## Direct Radiolabeled <sup>99</sup>Tc<sup>m</sup>-EGF and Biological Distribution in C6 Rats

### Abstract

The method of technetium-99m direct radiolabeling of epidermal growth factor (EGF) and the biological distribution characteristics of <sup>99</sup>Tc<sup>m</sup> EGF in C6 bearing rats were explored. Following reduction of EGF (2.5 μg) with 2 ME (20 mL/L, 10 μL), EGF was labeled with <sup>99</sup>Tc<sup>m</sup> in the presence of SnCl<sub>2</sub> (0.5 μg). The results show that radiochemical purity of <sup>99</sup>Tc<sup>m</sup>-EGF is more than 95% and <sup>99</sup>Tc<sup>m</sup>-EGF is of the characteristic of stability. The biological activity analyzed by the culture of endothelial cells shows that there is no significant difference between <sup>99</sup>Tc<sup>m</sup>-EGF and EGF (P>0.05). Biological distribution is observed at different time point after injection of <sup>99</sup>Tc<sup>m</sup> EGF into tumor bearing Wistar rats, and shows <sup>99</sup>Tc<sup>m</sup> EGF is mainly accumulated in live

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r, kidney and spleen and least accumulated in the brain. Tumor take r relatively high concentration of  $^{99}\text{Tc}^{\text{m}}$  EGF and the uptake ratio of tumor to normal tissue is 2.25 at 4 h. So  $^{99}\text{Tc}^{\text{m}}$  EGF prepared by this direct method appears to be a feasible way to detect the tumors expressing high EGFR (such as glioma) .

## Key words

[EGF](#) [EGFR](#)  [\$^{99}\text{Tc}^{\text{m}}\text{O}\_4^-\$](#)  [radiolabeling](#)

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