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肺癌Calu-3细胞核摄取^{99m}Tc-DTPA-DG实验研究

Uptake of ^{99m}Tc-DTPA-DG by the nucleus of lung cancer cells Calu-3

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英文关键词: [^{99m}Tc-DTPA-DG](#) [Radioactive drug](#) [Cell line, tumor](#) [Cell nucleus](#)

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中文摘要:

目的 观察^{99m}Tc-DTPA-DG是否进入肿瘤细胞核,验证其用于肿瘤显像的潜在可行性。方法 将体外培养的肺癌细胞Calu-3分为5组:A组为^{99m}Tc-DTPA-DG组,B组为¹⁸F-FDG组,C组为^{99m}Tc-DTPA组,D组为^{99m}TcO₄⁻组,E组为生理盐水组。每组各设3个浓度,即每孔加入放射性药物5、10、20 μCi/0.10 ml,对照组加入同等量生理盐水,每组各设5个复孔。加入各种药物及生理盐水2 h后消化收集细胞,检测各组细胞放射性计数后,分离细胞核,检测细胞核的放射性计数,分离的细胞核涂片行苏木素伊红(HE)染色后镜检。结果 镜检结果显示细胞核计数占细胞总计数比例达95%。γ测量仪检测显示肺癌细胞Calu-3对^{99m}Tc-DTPA-DG和¹⁸F-FDG各放射性活度组的摄取均明显高于^{99m}Tc-DTPA、^{99m}TcO₄⁻及生理盐水组,差异有统计学意义(P<0.05)。细胞核计数结果显示^{99m}Tc-DTPA-DG组进入细胞核比率明显高于¹⁸F-FDG组(P<0.05)。结论 ^{99m}Tc-DTPA-DG可以进入肿瘤细胞核,故可降低肿瘤诊断的假阳性率,在区分炎症与肿瘤方面有价值,是一种潜在的可用于肿瘤显像的靶向分子显像剂。

英文摘要:

Objective To observe the uptake of ^{99m}Tc-DTPA-DG by the nucleus of lung cancer cells Calu-3, in order to observe if ^{99m}Tc-DTPA-DG could cut down the false positive rates (FPR) of tumor diagnosis and the utility of ^{99m}Tc-DTPA-DG in tumors. **Methods** The lung cancer cells were assigned to five groups: group A, ^{99m}Tc-DTPA-DG; group B, ¹⁸F-FDG; group C, ^{99m}Tc-DTPA; group D, ^{99m}TcO₄⁻; group E, saline. One of the radioactive drugs (5, 10 or 20 μCi/0.10 ml) was added into each well; 0.10 ml NS was added in control groups. There were 5 duplicate wells in each group. The cells were incubated for another 2 h, then were digested and collected, finally the radiocounting was determined in each group. The cell nucleus were then isolated, and the radiocounting was determined again. The isolated cell nuclei were smeared and dyed with hematoxyline eosin (HE), then observed under microscope. **Results** The count results showed the proportion of isolated nuclei reached 95% under microscope. The uptake of ^{99m}Tc-DTPA-DG and ¹⁸F-FDG by lung cancer cells Calu-3 determined by γ counter were all more than that of the groups of ^{99m}Tc-DTPA, ^{99m}TcO₄⁻ and NS; the differences were significant (P<0.05). The uptake rates of ^{99m}Tc-DTPA-DG by cell nuclei were much higher than that of ¹⁸F-FDG (P<0.05). **Conclusion** ^{99m}Tc-DTPA-DG can enter tumor cell nuclei, so might be valuable in distinguishing inflammation and tumors. It is a targeted molecular imaging agent in tumors diagnosis.

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