

论文

S-(2-18F-氟代乙基)-L-蛋氨酸的合成及其放射药理活性

唐刚华;王明芳;唐小兰;罗磊;甘满权

1. 第一军医大学 南方医院 南方PET中心, 广东 广州 510515; 2. 华南农业大学 理学院, 广东 广州 510642

摘要:

目的研制肿瘤氨基酸代谢显像剂S-(2-18F-氟代乙基)-L-蛋氨酸(18FEMET),评价其区分炎症和肿瘤的价值。方法采用亲核取代反应,由两步法合成18FEMET。测定正常小鼠、肿瘤及炎症小鼠体内FEMET生物分布,对模型小鼠进行18FEMET PET显像,并与2-18F-2-脱氧-D-葡萄糖(FDG)和O-(2-18F-氟代乙基)-L-酪氨酸(FET)比较。结果18FEMET手工合成时间约为70 min,未校正总放化产率为15%~25%,放化纯度大于95%。正常小鼠中胰腺、肾脏、结肠、肝和心脏等脏器摄取18FEMET较高,且放射性滞留时间较长,血液和脑摄取18FEMET较低。肿瘤细胞可高度摄取18FEMET,FDG和FET,炎症组织也可高度摄取FDG,但几乎不摄取18FEMET和FET。结论18FEMET制备简便,能够区分肿瘤和炎症,可望成为一种有前景的特异性肿瘤氨基酸代谢PET显像剂。

关键词: S-(2-18F-氟代乙基)-L-蛋氨酸 肿瘤 炎症 体内分布 正电子发射断层显像

Synthesis and radiopharmacology of S-(2-18F-fluoroethyl)-L-methionine for tumor imaging

TANG Gang-hua; WANG Ming-fang; TANG Xiao-lan; LUO Lei; GAN Man-quan

Abstract:

AimTo develop S-(2-18F-fluoroethyl)-L-methionine (18FEMET) as an amino acid positron emission tomography (PET) tracer for tumors, and to evaluate the value of 18FEMET in the differentiation of experimental tumor and experimental inflammation. Methods18FEMET was prepared by nucleophilic fluorination reaction via a two-step procedure. Biodistribution of 18FEMET in normal mice, carcinoma-bearing mice and inflammatory mice, and 18FEMET PET imaging for carcinoma-bearing mice and inflammatory mice were performed compared with 2- [18F] fluoro-2-deoxy-D-glucose (FDG) and O-(2-[18F] fluoroethyl)-L-tyrosine (FET). ResultsThe overall radiochemical yield with no decay correction was 15%-25%, the whole synthesis time was about 70 min by manual operation, and the radiochemical purity was above 95%. High uptake and long retention of 18FEMET in pancreas, kidney, colon, liver and heart were observed. But low uptakes in brain and blood were found. Furthermore, high uptake of 18FEMET, FDG and FET in tumor, high uptake of FDG in inflammatory tissue, and almost no uptake of 18FEMET and FET in inflammatory tissue were also observed. Conclusion18FEMET is easy to prepare and can be used to differentiate between tumor and inflammatory tissue. It seems to be a potential amino acid tracer for tumors with PET imaging.

Keywords: tumor inflammation biodistribution PET imaging S-(2-18F-fluoroethyl)-L-methionine

收稿日期 2002-12-06 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: 唐刚华

作者简介:

参考文献:

本刊中的类似文章

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(186KB)
- ▶ [HTML全文]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ S-(2-18F-氟代乙基)-L-蛋氨酸
- ▶ 肿瘤
- ▶ 炎症
- ▶ 体内分布
- ▶ 正电子发射断层显像

本文作者相关文章

- ▶ 唐刚华
- ▶ 王明芳
- ▶ 唐小兰
- ▶ 罗磊
- ▶ 甘满权

PubMed

- ▶ Article by
- ▶ Article by
- ▶ Article by
- ▶ Article by
- ▶ Article by

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text" value="4546"/>