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研究简报

气相色谱法直接测量^{18}F-FDG 中Kryptofix 2.2.2的含量

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摘 要 目的对18F-脱氧葡萄糖制备中用作亲核取代反应相转移催化剂，具有强毒性的氨基聚醚Kryptofix 2.2.2的含量进行直接测量，严格控制在50?g/mL的质控范围内。方法 应用气相色谱仪，选用OV-101型毛细管作为分离柱，利用氢火焰检测器(FID)和氮磷检测器(NPD)检测Kryptofix 2.2.2。 结果 氨基聚醚Kryptofix 2.2.2 在分离柱的保留时间为2.4 min,最低检测水平为0.50 ?g/mL。30批次本中心常规制备的18F-FDG中Kryptofix 2.2.2含量检测值为1.10±0.15?g/ml；10批没有应用AG50型树脂吸附的平均含量检测值为106.0±21.0?g/ml。结论 应用气相色谱法对Kryptofix 2.2.2可以进行快速、高灵敏度检测，其检测灵敏度比TLC法高出50倍；同时可直接测量，排除其他杂质的干扰；该方法可推广应用于18F-FDG和其它18F亲核标记正电子药物的日常质量控制检测。

关键词 18F-FDG Kryptofix 2.2.2 气相色谱 质量控制

分类号

Direct measurement of Kryptofix 2.2.2 in 18F-FDG by Gas Chromatography

Abstract Objective To explore a direct method to analysis of Kryptofix 2.2.2 that is used as a phasetransfer reagent to facilitate the nucleophilic reaction of 18F-FDG . Methods To apply the Gas Chromatography coupled with a flame ionization detector(FID) and a nitrogen-selective detector(NPD) and use the OV-101 megabore capillary column. Results Kryptofix 2.2.2 can be eluted intact in 2.4min time from the column, and detected at the levels as low as 0.50?g/mL;The average residual of 30 normal batchs in our facility are 1.10±0.15?g/ml(n=30);The levels of the cryptand in 10 batchs preparation of FDG without the AG50 Resin are 106.0±21.0?g/ml(n=10). Conclusions direct measurement of Kryptofix 2.2.2 levels in routine 18F-FDG preparation is possible using Gas Chromatography coupled with NPD detector, and a high sensitivity (50 times better than TLC method) can be get; It can use to analysis Kryptofix 2.2.2 as the 18F-FDG Daily Quality Control measurement quickly and quantitatively. [Key words] 18F-FDG, Kryptofix 2.2.2, Gas Chromatography, Quality Control

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