

论文 氨基糖苷类抗生素在蒸发光散射检测器中响应因子的一致性考察

王明娟;胡昌勤;金少鸿

中国药品生物制品检定所, 北京 100050

摘要:

目的考察不同的氨基糖苷类抗生素在蒸发光散射检测器中的响应因子是否一致,进而考察ELSD在该类药的有关物质检查、多组分同类物质的相对比例测定及氨基糖苷类新药基准品的建立等方面应用的可能性。方法用HPLC-ELSD法测定了一组氨基糖苷类抗生素(阿米卡星、西索米星、奈替米星、依替米星和一类新药威替米星)的线性方程。色谱条件:Diamonsil C₁₈柱150 mm×4.6 mm,5 μm;流动相0.2 mol·L⁻¹三氟醋酸-甲醇(94:6);流速0.6 mL·min⁻¹。检测器条件:漂移管温度110℃,气体流速2.80 L·min⁻¹。结果上述5种物质的线性方程间无显著性差异($P>0.05$)。结论5种不同氨基糖苷类抗生素在蒸发光散射检测器中的响应因子一致,可以尝试用HPLC-ELSD法测定该类药中的有关物质、控制多组分药物的相对比例并建立一类新药基准品。

关键词: 氨基糖苷类抗生素 响应因子 高效液相色谱法 蒸发光散射检测器

ANALYSIS OF THE RESPONSE FACTORS OF DIFFERENT AMINOGLYCOSIDE ANTIBIOTICS DETECTED BY EVAPORATIVE LIGHT-SCATTERING DETECTOR

WANG Ming-juan; HU Chang-qin; JIN Shao-hong

Abstract:

AIMTo analyze if the response factors of different aminoglycoside antibiotics detected by evaporative light-scattering detector (ELSD) are the same. If they are, then ELSD can be applied to the quality analysis of this class of antibiotics. METHODSThe response factors of five different aminoglycosides (amikacin, sisomicin, netilmicin, etimicin and vertilmicin) detected by ELSD were determined by using a Diamonsil C₁₈ column (150 mm×4.6 mm, 5 μm) as analytical column and 0.2 mol·L⁻¹ trifluoroacetic acid-methanol (94:6) as mobile phase at a flow rate of 0.6 mL·min⁻¹, the temperature of the drift tube was set at 110℃, and the flow of carrier gas at 2.80 L·min⁻¹. Detector responses (*A*) and the amount of injection of each substance (*m*) were fitted to the logarithmic regression: $\log A = b \log m + \log a$.

RESULTSThe linear regression equation obtained were: amikacin: $Y = 1.46X + 5.07, \gamma = 0.9997$; sisomicin: $Y = 1.51X + 5.03, \gamma = 0.9997$; netilmicin: $Y = 1.52X + 4.88, \gamma = 1.000$; etimicin: $Y = 1.46X + 4.85, \gamma = 0.9999$; vertilmicin: $Y = 1.41X + 4.90, \gamma = 0.9998$. The differences between them were negligible.

CONCLUSIONDifferent aminoglycosides can give the same responses with ELSD detection. So, the HPLC-ELSD methods can be applied to the analysis of impurities, the control of the ratio of multi-components drug and the determination of new substances by using another substance as reference, etc.

Keywords: response factor HPLC evaporative light-scattering detector aminoglycoside antibiotics

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