高等学校化学学报 2007 , 28 (11): 2056-2059 ISSN: 0251-0790 CN: 22-1131/O6

研究论文

多杀菌素及其光照降解产物分析

杨成对, 宋莉晖

清华大学化学系, 北京 100084

收稿日期 2007-3-6 修回日期 网络版发布日期 2007-11-10 接受日期

摘要 采用五级质谱研究了多杀菌素的质谱断裂规律, 应用串联质谱选择反应检测技术考察了光照条件下多杀菌素的降解程度, 利用液相色谱-质谱联用手段分析了多杀菌素降解产物, 并推断了主要降解产物的结构. 结果表明, 多杀菌素17碳上的福乐糖胺容易失去, 三氧甲基鼠李糖很稳定; 多杀菌素浓度随紫外光照射时间的增加而降低, 在照射484 min后, 降解率达到70%左右, 形成11种降解产物, 这些降解产物是多杀菌素A或D经氧化、还原及水解等反应形成.

关键词 多杀菌素 液相色谱-质谱 光照 降解

分类号 0657.63

Analyses of Spinosad and Its Degradates from Light Irradiation

YANG Cheng-Dui*, SONG Li-Hui

Department of Chemistry, Tsinghua University, Beijing 100084, China

Abstract In this paper we report 5-stage mass spectrum fragmentations of spinosad A and D. Degrading rate of spinosad under ultraviolet light irradiation was also investigated with selection reaction monitoring(SRM) mode. Degradates of spinosad were analyzed with liquid chromatography coupling with mass spectrometry, and the chemical structures of main degradates were also assigned. It can be concluded that (1) forosamine on 17-carbon can be easily lost, but difficult for rhamnose sugar; (2) spinosad concentration decreased when irradiation time increased, degrading rate was up to about 70% for irradiating 484 min, and 11 degradates were produced. These degradates were products of the oxidation, reduction, and hydrolytic reactions.

Key words Spinosad Liquid chromatography-mass spectrometry Light irradiation Degradation

DOI:

通讯作者 杨成对 yangcd@chem.tsinghua.edu.cn