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(5-(((2,5-二氧杂吡咯烷-1-基)氧基)-5-氧戊基)三苯基溴化磷的合成

摘 要

目的: 线粒体是双层膜的细胞器,为细胞的供能场所不仅参与了细胞的分化、生存、凋亡,并且可以控制细胞生长,还在细胞信息传递方面起作用。线粒体是代谢活动的重要中心,作为一种潜在的治疗方法参与许多疾病的发生,特别是癌症治疗,一直受到人们的关注。健康线粒体和癌变线粒体之间的结构和功能差异,如膜电位、呼吸率、能量产生途径和基因突变,可以用来设计癌症线粒体的选择性靶向系统。本课题通过对三苯基磷的改造合成(5-(((2,5-二氧杂吡咯烷-1-基)氧基)-5-氧戊基)三苯基溴化磷。方法:以三苯基磷为原料与5-溴戊酸反应合成(4-羧丁基)三苯基溴化磷,产物再与*N*-羟基琥珀酰亚胺反应生成最终产物(5-(((2,5-二氧杂吡咯烷-1-基)氧基)-5-氧戊基)三苯基溴化磷。结果:尝试合成目标产物(5-(((2,5-二氧杂吡咯烷-1-基)氧基)-5-氧戊基)三苯基溴化磷。结论:尝试以三苯基磷为原料经过一系列的化学反应得到具有线粒体靶向的新型三苯基阳离子类化合物。

关键词: 线粒体; 合成; 研究进展

Synthesis of 5-(((2, 5-dioxaheteropyrrolidine -1- group) oxygen) -5-oxamyl) triphenyl phosphorous bromide

Abstract

Objective: Mitochondria are double membrane Organelles, which not only participate in cell differentiation, survival and apoptosis, but also control cell growth and play an important role in cell signaling. Mitochondria is an important center of metabolic activity. As a potential therapeutic method, it is involved in many diseases, especially in cancer therapy. The structural and functional differences between healthy and cancerous Mitochondria, such as membrane potential, absorptivity, energy production pathway and gene mutation, can be used to design the selective targeting system of cancer mitochondria. The synthesis of (5-(((2, 5-dioxapypyrrolidine-1-yl) oxo)-5-oxamyl) triphenyl phosphonium bromide by Triphenylphosphine modification was studied. Methods: 4-carboxylbutyltriphenyl phosphonium bromide was synthesized from Triphenylphosphine acid and 5-bromopentric acid, and then reacted with *N*-Hydroxysuccinimide, the final product (5-(((2, 5-dioxapypyrrolidine-1-yl) oxo)-5-oxamyl) triphenyl phosphonium bromide was obtained from the reaction of 5-dione. Results: the target product (5-(((2, 5-dioxapypyrrolidine-1-yl) oxy)-5-oxamyl) triphenyl phosphonium bromide was synthesized. Conclusion: A series of reactions using Triphenylphosphine as raw material have been carried out to obtain novel triphenyl cations with mitochondrial targeting.

Key words: mitochondria; Synthesis; Research progress

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