

研究简报

脱镁叶绿酸-a甲酯的1,3-偶极环加成及其叶绿素衍生物的合成

纪建业^a, 李家柱^b, 王虎^b, 李付国^b

韩光范^c, 沈荣基^d, 王进军^{*b}

(^a通化师范学院化学系 通化 134002)

(^b烟台大学应用化学系 烟台 264005)

(^c江苏科技大学材料科学与工程学院 镇江 212003)

(^d仁济大学微工程学院 釜山 韩国)

收稿日期 2006-3-14 修回日期 2006-6-9 网络版发布日期 2006-11-21 接受日期 2006-7-11

摘要 以脱镁叶绿酸-a甲酯(**1**)为起始原料, 利用其3-位乙烯基与重氮甲烷的1,3-偶极环加成反应, 得到3-位氢化吡唑取代的脱镁叶绿酸-a衍生物**2**, 通过热裂解使得3-位吡唑基开环并重排成环丙基. 碱性条件下, 所生成的3-环丙基取代的卟吩**3**脱甲氧甲酰基后转化成焦脱镁叶绿酸衍生物**4**. 选用重氮乙烷为另一偶极体与**1**进行1,3-偶极环加成反应, 则给出2-甲基环丙基取代的立体异构体卟吩**5**, 同样经过脱甲氧甲酰基处理,

得到焦脱镁叶绿酸衍生物**6**. 所合成新叶绿素衍生物**2**~**6**均经UV, IR, ¹H NMR及元素分析证明其结构.

关键词 [叶绿素-a](#) [脱镁叶绿酸](#) [焦脱镁叶绿酸](#) [1,3-偶极环加成反应](#) [光动力疗法](#)

分类号

1,3-Dipolar Cycloaddition of Methyl Pheophorbide-a and Synthesis of Chlorophyll Derivative

Ji Jian-Ye^a, Li Jia-Zhu^b, Wang Hu^b, Li Fu-Guo^b, Han Guang-Fan^c

Shim Young Key^d, Wang Jin-Jun^{*b}

(^a Department of Chemistry, Tonghua Teachers College, Tonghua 134002)

(^b Department of Applied Chemistry, Yantai University, Yantai 264005, China)

(^c School of Material and Environmental Engineering, Jiangsu University of Science and Technology, Zhenjiang 212003)

(^d School of Nano Engineering, Inji University, Pusan, Korea)

Abstract From methyl pheophorbide-a (MPa, **1**), the pheophorbide-a derivative substituted with hydro-pyrazol **2** was obtained by the 1,3-dipolar cycloaddition of vinyl group at 3-position with diazomethane. Ring opening of this chlorin was performed by heating to rearrange the hydropyrzaol ring into the cyclopropyl group. In basic condition the cyclopropyl-substituted chlorin **3** was converted into pyropheophorbide **4** by demethoxyformylation. The diazoethane was chosen as another dipole and reacted with chlorin **1** in 1,3-dipolar cycloaddition style to give 2-methylcyclopropyl-substituted stereoisomer chlorin **5**. The treatment for demethoxyformylation like chlorin **2** yielded pyropheophorbide **6**. The structures of all new chlorophyll-a derivatives **2**~**6** were characterized by elemental analysis, UV, IR and ¹H NMR spectra.

Key words [chlorophyll-a](#) [pheophorbide](#) [pyropheophorbide](#) [1,3-dipolar cycloaddition](#) [photodynamic therapy](#)

DOI:

通讯作者 王进军 wjj1955@163.com

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(0KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [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](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“叶绿素-a”的相关文章](#)

▶ 本文作者相关文章

- [纪建业^a](#)
- [李家柱^b](#)
- [王虎^b](#)
- [李付国^b韩光范^c](#)
- [沈荣基^d](#)
- [王进军^b](#)
- [b](#)