Title	Facile synthesis of zymosterol and related compounds
Sub Title	
Author	荻原, 典子(Ogihara, Noriko) 森崎, 益雄(Morisaki, Masuo)
Publisher	共立薬科大学
Publication year	1988
Jtitle	共立薬科大学研究年報 (The annual report of the Kyoritsu College of Pharmacy). No.33 (1988.) ,p.166- 166
JaLC DOI	
Abstract	
Notes	抄録
Genre	Technical Report
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000033-0166

No. 33 (1988)

Facile Synthesis of Zymosterol and Related Compounds*

Noriko OGIHARA and Masuo MORISAKI

荻原典子, 森崎益雄

Facile preparations of cholesta-8,24-dien-3β-ol, zymosterol (**1**) and the related 7,24-diene (**2**), 5,7,24-triene (**3**) and 8,14,24-triene (**4**), all of which are potential intermediates of cholesterol or ergosterol biosynthesis, are described.

5-Cholene-3β,24-diol 3-tetrahydropyranyl ether is oxidized to the 24-aldehyde, which is then converted into the 3β-acetoxy-24-acetal (**5**) mp, 124—126°C through acetalization and acetylation. Successive treatment of **5** with *N*-bromosuccinimide, *tetra-n*-butylammonium bromide and *tetra-n*-butylammonium fluoride gives chola-5,7-diene-3β-tetrahydropyranyloxy-24-acetal (**6**, 43% yield), the common synthetic progenitor of all the targeted sterols. Isomerization of **6** with *p*-toluenesulfonic acid gives the 8,14-diene (**7**) in 55% yield, after basic hydrolysis. Catalytic hydrogenation of the 5,7-diene (**6**) and 8,14-dien-3β-ol (**7**) gives the 7-ene (**8**), or a mixture (*ca.* 1 : 1) of the 8(9)-ene (**9**) and the 8(14)-ene (**10**), respectively.

Deacetalization of the corresponding acetates of **9** plus **10** followed by Wittig reaction with isopropylidene triphenylphosphorane yields, after saponification, a mixture (*ca.* 1 : 1) of zymosterol (**1**), and cholesta-8(14), 24-dien-3β-ol in 40% yield. Recrystallization of this material from methanol gave zymosterol, mp 109-111°C. In the same manner, deacetalization of **6**, **7**, and **8** followed by Wittig reaction gives the 5,7,24-triene (**3**), 8,14,24-triene (**4**) and 7,24-diene (**2**), respectively.

HPLC and GC behaviors of these sterols, which would be useful for their identification in biological systems, are also described.

* 本報告は *Chem. Pharm. Bull.*, **36**, 2724 (1988) に発表.