

Title	Sterol metabolism in insects : dealkylation of phytosterol to cholesterol
Sub Title	
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Publisher	共立薬科大学
Publication year	1993
Jtitle	共立薬科大学研究年報 (The annual report of the Kyoritsu College of Pharmacy). No.38 (1993. ) ,p.64- 64
JaLC DOI	
Abstract	
Notes	抄録
Genre	Technical Report
URL	<a href="https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000038-0064">https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000038-0064</a>

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## Sterol Metabolism in Insects : Dealkylation of Phytosterol to Cholesterol

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Insects obtain indispensable sterol by the modification of C-24-alkylated dietary sterols. Since this process is extremely important for insects, they have employed a diversified enzyme system with an excellent ability to dealkylate a variety of phytosterols, regardless of whether the C-24-alkyl group is methyl or ethyl, whether the stereochemistry at C-24 is *R* or *S*, and whether the C-22 double bond is present or absent. The dealkylation of phytosterol is carried out by three successive reactions: dehydrogenation, epoxidation, and epoxide fragmentation. The resulting desmosterol is eventually hydrogenated to cholesterol. The crucial step is fragmentation of epoxide, and this reaction appears to occur in a highly stereoselective manner, as evidenced from the *pro-S*- and *pro-R*-methyl groups of fucosterol (24*R*, 28*R*)-epoxide being transformation to the (*Z*)- and (*E*)-methyl groups, respectively, of desmosterol. Experimental evidences of all these results obtained by the use of the silkworm *Bombyx mori* have been presented. Also discussed are sterol structure requirement of *B. mori*, and inhibitors of sterol metabolism in insects.

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\* 本報告は *Acc. Chem. Res.*, **26**, 139—146, (1993) に発表。

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