Title	Characteristics of phospholipid transacylase of escherichia coli
Sub Title	
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Publisher	共立薬科大学
Publication year	1987
Jtitle	共立薬科大学研究年報 (The annual report of the Kyoritsu College of Pharmacy). No.32 (1987.) ,p.55- 55
JaLC DOI	
Abstract	
Notes	抄録
Genre	Technical Report
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000032-0055

Characteristics of Phospholipid Transacylase of *Escherichia coli**

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Previously we have investigated the incorporation of radiolabeled free fatty acids into 2-acyl lysophospholipids by the envelope fraction of *E. coli* (HOMMA et al (1981) Biochim. Biophys. Acta). Their incorporation was found completely dependent on the presence of ATP. The incorporation was not observed from acyl Coenzyme A (acyl CoA), and was markedly stimulated by the addition of acyl carrier protein (ACP). Thus the acyltransferase of 2-acyl lysophospholipid was presumed to utilize acyl ACP preferentially over acyl CoA. ATP was appreciably required for the activation of fatty acids to acyl ACP. In the course of this investigation, it was observed that radiolabeled 2-acyl lysophospholipid was still acylated to diacylphospholipid even in the absence of ATP. This result suggested that there exist some acyl donor (s) in the envelope fraction except for free fatty acids and acyl CoA. In a previous paper, we have demonstrated that the diacylphospholipids in the envelope fraction were the acyl donor (s) and that acyl groups were provided from the diacylphospholipids directly to the lysophospholipid (HOMMA et al (1982) J. Biochem. **91** 1093—1101). This was then the first demonstration of a new type of the activity of phospholipid transacylase in *E. coli*. In this communication we studied the characteristics and specificities of this phospholipid transacylase of *E. coli*.

The activity catalyzed a reversible transfer of an acyl group between diacylphospholipids. Acyl group in the 1-position of glycerol backbone was selectively transferred and palmitic acid was the only fatty acid species transferred. Presumably neutral lipids do not serve as substrates.

The transacylase was firmly associated with the envelope fraction of *E. coli*. Potasium chloride or urea was not effective in solubilization of the activity and about half of the activity was only solubilized with Triton X-100. This observation was consistent with the equal distribution of the activity between the outer membrane and the inner membrane of *E. coli*. Functional aspect of this phospholipid transacylase of *E. coli* was also discussed.

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* 本報告は *J. Biochem.*, **101**, 1033—1039 (1987) に発表.

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