Effect of Eicosapentaenoic Acid on Cholesterol Gallstone Formation in C57BL/6J Mice
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Purpose
The present study investigated the preventive effect of ω3 fatty acids against cholesterol gallstone (CG) formation.

Methods
CG formation was induced in C57BL/6J mice using a lithogenic diet (LD). The mice were divided into four treatment groups: i) LD, ii) LD plus eicosapentaenoic acid (EPA), iii) LD plus docosahexaenoic acid (DHA) and iv) LD plus EPA plus DHA. Subsequent to feeding the mice the LD for four weeks, EPA and/or DHA (both 70 mg/kg/day) were orally administered for eight weeks.

Results
The mice in the EPA treatment groups exhibited significantly less gallstone formation than those in the LD group. By contrast, DHA treatment only slightly suppressed gallstone formation. The expression of mucin 2, 5AC, 5B and 6 was significantly decreased in the gallbladders of mice in the LD plus EPA (70% to 90%) and LD plus DHA (30% to 50%) groups, compared with that in the mice in the LD group. In addition, the mRNA expression of 3-hydroxy-methylglutaryl-coenzyme A reductase was significantly decreased in the livers of mice in the EPA treatment group compared with that in the livers of mice in the LD group.

Conclusion
In conclusion, EPA was found to have a dominant anti-lithogenic effect in C57BL/6J mice.