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“Study of chiral recognition of bilayered phosphatidylcholine vesicles using a helicene probe: Characteristic function of cholesterol.”

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Incorporated into bilayered chiral phosphatidylcholine (PC) vesicles, 2-hydroxymethyl[5]thiaheterohelicene having a labile helix that functioned as a chirality probe, exhibited induced CD absorptions. The Cotton effects demonstrated opposite signs according to the difference in chirality of PC applied, indicating the chiral recognition of the vesicles. The vesicles formed by PCs with unsaturation or acyl chains shorter than DPPC exhibited a slightly stronger CD, presumably because of an increase in the constraint by the vesicles. The vesicles formed with egg lecithin and bovine heart lecithin also induced CD similar to those of (L)PC vesicles. The influence of cholesterol (Cho) and four kinds of analogs on the CD intensities was investigated. Following addition of Cho, the CD intensities decreased slightly in the (L)DPPC vesicles and increased moderately in the (D)DPPC vesicles. On the other hand, by addition of Cho analogs the CD intensities were nearly unchanged in (L)DPPC vesicles and weakened moderately in the (D)DPPC vesicles.