

Abstract Submitted
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The Effect of Cholesterol on the Partitioning of 1-Octanol into POPC Lipid Bilayers¹ ROJA ZAKARIAEE, BARBARA FRISKEN, Simon Fraser University — The exact mechanism of anesthesia is not yet completely understood. One common type of anesthetics is n-alkanol, a subgroup of hydrocarbon alcohols. In this work the partition coefficient of 1-octanol into liposomes containing both: 1-palmitoyl-2-oleoyl-sn-3-glycero-phosphatidylcholine (POPC), a semi-unsaturated lipid, and cholesterol was measured as a function of cholesterol molar concentration. This study was carried out by means of isothermal titration calorimetry, a calorimetric tool that measures heats of interactions. Our results indicate that the partition coefficient of 1-octanol in POPC bilayers at 45 °C increases with increasing concentration of cholesterol. In contrast, previous studies have shown that the partition coefficient of alkanols into bilayers containing saturated lipids decreases with increasing cholesterol concentration. This may be due to the fact that bilayers composed of saturated lipids are more tightly packed than those composed of unsaturated lipids. Our results could therefore open a new window on different behaviors of these two types of lipid bilayers when interacting with n-alkanols.

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