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Interaction of Glucagon with Dimyristoyl-phosphatidylcholine in Vesicular and Discoidal Complexes

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Glucagon fragments dimyristorylphosphatidylcholine(DMPC) liposomes into discoidal complex. The concentration of glucagon required to fragment the vesicles increases with increasing pH and the fragmentation appears to be the result of glucagon binding to the vesicles. It was also observed that the fragmentation is facilitated by NaCl concentration which is also due to increased glucagon binding. From the quenching of fluorescence by doxyl group, located at various positions of acyl chain of lipid, Trp of glucagon was found to be present close to the bilayer surface in the vesicular complex. However, the Trp fluorescence was quenched by the doxyl group in the discoidal complex to an equal extent regardless of the position of this spin label in the acyl chain. This and the second derivative UV spectroscopy of Tyr suggested that segments including Tyr-13 and Trp-25 are involved in the discoidal complex formation and that the orientation of glucagon is not normal to the bilayer surface.