

Large cation-selective pores from rat liver peroxisomal membranes incorporated to planar lipid bilayers

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Abstract

Fusion of a highly purified fraction of rat liver peroxisomal membranes to planar lipid bilayers incorporates large, cation-selective voltage-dependent pores. The PK/PCl ratio of these pores, estimated in KCl gradients, is close to 4. The pores display several conductance states and spend most of the time open at voltages near 0 mV, closing at more positive and negative voltages. At voltages near 0 mV the most frequent open state has a conductance of 2.4 nS in 0.3m KCl. At voltages more positive and more negative than 10 mV the most frequent open state displays a conductance of 1.2 nS in 0.3m KCl. With these results pore diameters of 3 and 1.5 nm, respectively, can be estimated. We suggest that these pores might account for the unusually high permeability of peroxisomes to low molecular weight solutes. Fusion also incorporates a perfectly anion-selective, two-open states channel with conductances of 50 and 100 pS in 0.1m KCl.

Keywords Peroxisome, Fusion, Planar bilayer, Pore