

Purification of plasma membranes from mouse parotid gland and membrane reorganization in response to isoproterenol

Lopez Solis, Remigio O.

Durham, John P.

Two highly purified plasma membrane fractions have been obtained from mouse parotid glands by a combination of differential centrifugation and isopycnic centrifugation in discontinuous sucrose gradients. The membranes were characterized by enzymic, chemical and morphological criteria. The effect of isoproterenol, which induces parotid acinar cells to proliferate, upon sialic acid and five different enzyme activities located in the plasma membrane phosphodiesterase (EC 3.1.4.1), Mg²⁺-ATPase (EC 3.6.1.4), leucine aminopeptidase (EC 3.4.1.1), protein kinase (EC 2.7.1.37) and sialyltransferase (EC 2.4.99.1), were quantified along the cell cycle. Plasma membrane sialic acid content falls 30% within 30 min and remains depressed for at least 6 h with the major restoration towards normal levels occurring between 12 and 16 h later. In contrast multiple daily isoproterenol injections lead to a more than 2-fold elevation of sialic acid content. Sialyltransferase activity rises 2-fold by 12 h after