

EFFECT OF ALTERED pH_{in} ON PROPERTIES OF M_2 ION CHANNEL OF INFLUENZA A VIRUS.

Yajun Tang, Jared Knopman, Robert A Lamb, Lawrence H Pinto: Northwestern University

We studied the currents and pH_{in} of oocytes that either expressed the M_2 protein (Udorn and Rostock subtypes) or were treated with the protonophore FCCP using two electrode voltage clamp and intracellular pH microelectrodes. Previous studies of M_2 -expressing cells have shown that lowered pH_{out} increased conductance of the amantadine-sensitive currents, but that upon entering low pH solutions the amplitude of the inward current declined after about 2 min of bathing. We studied the mechanism for this decrease by measuring the pH_{in} and conductance for the same value of pH_{out} and several values of pH_{in} , at three times, 10 sec after lowering pH_{out} (prior to acidification of the oocyte), ca. 2 min after lowering pH_{out} (prior to acidification measured with an intracellular pH electrode, but after acidification of the sub-membrane cytoplasm) and 5-7 min later (when pH_{in} of the oocyte had decreased uniformly to a steady low value that was not lower than pH_{out}). We confirmed that pH_{in} of both M_2 -expressing and FCCP-treated oocytes decreased while bathed in low pH solutions, thereby decreasing the driving force for H^+ . However, we did not find any evidence for inactivation of the channel for either Udorn or Rostock subtypes due to lowered pH_{in} for pH_{in} as low as pH_{out} . Supported by PHS grants AI-31882 (LHP) and AI-20201 (RAL) and HHMI.