

CALCIUM ANTAGONISTS INHIBIT COCKROACH OOCYTE CURRENTS AND VITELLOGENIC UPTAKE.

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During the vitellogenic process in cockroaches a serum calcium level of ~5mM is necessary to maintain in vitro vitellogenesis, optimum Ca^{++} influx and the normal ventral inward and dorsal outward ionic currents. Currents surrounding the Blattella germanica oocyte are deminished by lowering Ca^{++} using the chelator EGTA. Similarly in vitro vitellogenesis is inhibited by EGTA chelation of Ca^{++} . The Ca^{++} channel blockers Ni^{++} and Co^{++} are potent inhibitors of vitellogenesis however Ni^{++} actually accentuates major currents in terminal oocytes of Periplaneta americana. Vg can be shown to bind Ca^{++} to its surface. The Ca^{++} requirement for in vitro vitellogenesis in Nauphoeta cinerea can be relaxed by addition of either Ba^{++} or Sr^{++} . Calcium function in the vitellogenic process is a complicated phenomenon having possible actions at several sites: The Vg molecule, the oocyte membrane ion channels or pumps, Vg binding to its receptor and/or the endocytotic process. (Supported by American and Swiss NSF's.)