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Ionotropin is the mammalian digoxin-like material (DLM). It is a phosphocholine ester of a steroid with 23 carbon atoms.

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**Running title:** Ionotropin is the DLM

### Abstract

We describe a novel steroid, which we have named "Ionotropin." Its unique features are: [1] it has 23 carbon atoms and [2] it is a phosphocholine ester. There are no other known mammalian steroids with either structural feature. Ionotropin cross reacts with digoxin-specific antibodies and may be the long-sought, endogenous, mammalian digoxin-like material (DLM). Using LC-MS, we identified three other phosphocholine steroids in serum. Two of these steroids also cross-react with digoxin specific antibodies.

In adrenal extracts, we found both phosphocholine esters and corresponding phosphoethanolamine steroid esters. There are no other known phosphoethanolamine steroid esters. Together, these 8 compounds define a biosynthetic pathway from 7-dehydropregnenolone to Ionotropin. Ionotropin may be the only steroid hormone not synthesized with cholesterol as a precursor. Finally, we propose that Ionotropin serves as the endogenous potassium sparing hormone. Ionotropin provides a new understanding of renal, cardiac, gonadal and placental function.

### Keywords

Ionotropin, Digoxin-like materials; DLM; endogenous ouabain; phospho-steroids; steroid biosynthesis; potassium sparing hormone

Keywords: as submitted: Digoxin-like materials; phospho-steroids; potassium sparing hormone; Ionotropin; steroid biosynthesis

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