Schild's Equation and the Best Estimate of pA2 Value and Dissociation Constant of an Antagonist

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Calculation of the pA2 value and dissociation constants for an antagonist from the effects observed on isolated smooth muscles can be done in two ways: using Schild's plot procedure or Schild's equation. In our study we used the effects of muscarinic antagonists observed in experiments on isolated human and feline stomach and rat gastric fundus. Only the estimates of pA2 values and dissociation constants made using the Schild's equation on the basis of the lowest antagonist concentrations were not significantly different from the values calculated using the Schild's plot procedure. This suggest that, when it is impractical to perform the full Schild's plot procedure, the best estimate of pA2 values and dissociation constants can be done with the lowest antagonist concentration that significantly inhibits the effects of an agonist on an isolated smooth muscle preparation.

Key Words: acetylcholine; antimuscarinic agonists; atropine; bethanechol; carbachol; cholinergic agonists; gastric fundus; muscarinic agonists; parasympatholythics; receptors

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