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Effects of Aripiprazol On Cholinergic Neurotransmission in Gastric Smooth Muscles

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Introduction: Aripiprazole is an antipsychotic drug used for treatment of schizophrenia and bipolar disorders. Common side effects are on gastrointestinal system and their mechanism is not fully understood.

Objectives: Ex vivo study the effect of aripiprazol on circular strips of stomach smooth muscle.

Aim: To study the effects of aripiprazol on the smooth muscles in order to understand the causes for the common side effects on the gastrointestinal tract.

Methods: Gastric corpus smooth muscle preparations from male Wistar rats (n=12) were used. Strips were dissected and mounted and super fused with warmed Krebs solution. The contractile activity of smooth muscle preparations was registered isometrically. The activity was periodically tested by stimulation with 1×10^{-6} mol/l acetylcholine. All statistical analyses were performed using a specialized software SPSS, version 16.

Results: Aripiprazol ($1x10^{-6}$ mol/l - $1x10^{-4}$ mol/l) caused contractions in gastric circular smooth muscle tissues from rats. M-cholinergic receptor-blocking agent atropine ($1x10^{-6}$mol/l) significantly reduced the aripiprazol-induced contraction. In the presence of $1x10^{-6}$ mol/l acetylcholine, aripiprazol ($1x10^{-6}$ mol/l - $1x10^{-4}$ mol/l) caused relaxation of the test muscle tissues. It was determined that the amplitude of the induced relaxation was concentration-dependent.

Conclusions: Our results permit the suggestion, that the effect of **a**ripiprazol involves cholinergic neurotransmission on gastric smooth muscles. This is confirmed by aripiprazol–induced contraction in atropine–treated tissues. Residual muscle contraction suggests the possible drug influence on other receptors. The fact is confirmed by the relaxation effect of aripiprazol in the presence of Acetylcholine, i.e. other effects of aripiprazol become more prominent.

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