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Evidence that adrenergic; muscarinic; histaminic; anti-malarial drugs; opioid; nsaid, nicotinic; vasodilator drugs; rauwolfian alkaloid and adenosine receptors are parts or whole of the serotonin receptor: Chick rectum studies

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Abstract

This study investigated the effects acetylcholine, atropine,adrenaline, noradrenaline, propanolol, phentolamine, indomethacin; mepacrine, chloroquine; papaverine; brethylium; Adenosine Triphosphate; dipyridamole; guanethidine; d-tubocurarine; hexamethonium; burimamide and Reserpine

on the intrinsic tone and responses of the smooth muscles of the rectum of 1 day, 1week and 1month old chicks. The results of the study showed that chick rectum responded to both intrinsic and transmural electrical stimulation with graded, and age-dependent biphasic responses. Adrenaline; nor-adrenaline; papaverine; mepacrine; chloroquine; indommethacin; bretylium; hexamethonium; gunethidine; dipyridamole; d-tubocurarine and phentolamine relaxed while atropine, ATP, and acetylcholine contracted chick rectum smooth muscles. Guanethidine, which depletes nor-adrenaline at peripheral nerve endings in the manner of reserpine produced a slight direct relaxation effect on the smooth muscles of chick rectum suggesting that it depleted nor-adrenaline from the sympathetic peripheral nerve endings. Reserpine (which depletes nor-adrenaline, dopamine and serotonin from various binding sites in the brain and peripheral tissues)- pre-treatment did not abolish but only diminished the biphasic responses of chick rectum to intrinsic and electrical field stimulation by 98%. This showed that 75% of the biphasic response of chick rectum smooth muscles to intrinsic and electrical stimulation was mediated by serotonin and that all the assayed drugs that relaxed the chick rectum smooth muscles produced their relaxation responses by low-energy stimulation of β sub-units of the serotonin receptors while the drugs that contracted chick rectum smooth muscles produced their contractile responses by high energy-stimulation of α-sub-units of Serotonin receptors of chick rectum smooth muscles. Thus the classes of drugs assayed on chick rectum in this study: cholinergic drugs (acetylcholine, atropine); α-adrenergic -blocking drugs (phentolamine); adrenergic drugs; (adrenaline); β—adrenergic blocking drugs (propranolol); Non-Steroidal Anti-Inflammatory drugs (indomethacin); quinoline drugs (mepacrine, chloroquine); opioid drugs (papaverine); peripheral sympathetic nervous system blocking drugs (bretylium); vasodilator drugs (papaverine); sympathetic neuronal blocking and anti-hypertensive drugs (guanethidine); dilator of coronary arteries (dipyridamole0; neuromuscular blocking drugs (skeletal muscle relaxants) (d-tubocurarine); ganglion- blocking drugs (hexamethonium); Histamine receptor blocking drugs (burimamide); rauwolfia alkaloids (reserpine) and cellular energy-bond source (ATP) all interact with the body through stimulating/inhibiting one or both of the (β) (relaxation) or (α) (contraction)-mediating sub- units of the Serotonin receptor.

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