The response to vasopressin (1–100 mU/ml) was rather variable in character but a general pattern was discernible. Both layers of the muscularis externa typically showed a biphasic response to vasopressin composed of inhibition (fall in tension) followed by excitation (rise in tension above baseline level). Inhibition of both layers became apparent at about the same time, but the longitudinal layer usually led the circular in the subsequent excitation.

The response of the flat preparation to adenosine triphosphate (B.D.H.) was even more variable than that to vasopressin. In concentrations of 10^{-4}–3×10^{-4} g/ml, adenosine triphosphate usually produced prolonged inhibition selectively of the circular layer, frequently accompanied by excitation of the longitudinal layer. On repeated exposure, the flat preparation showed tachyphylaxis to both adenosine triphosphate (10^{-4}–3×10^{-4} g/ml) and vasopressin (1–100 mU/ml). The responses to both vasopressin and adenosine triphosphate were qualitatively unaltered in the presence of tetrodotoxin (10^{-7} g/ml).

The biphasic response to vasopressin (1–100 mU/ml) recordable from the longitudinal muscle is probably comparable with the inhibition and after-contraction found by Gilmore & Vane (1970) in response to high concentrations of vasopressin. With regard to the suggestion that adenosine triphosphate is the non-adrenergic inhibitory transmitter, it seems surprising that adenosine triphosphate (10^{-4}–3×10^{-4} g/ml) should produce its inhibitory effect predominantly on circular muscle, since Furness (1969) has shown that non-adrenergic inhibitory nerves supply the longitudinal as well as the circular layer of the muscularis externa of the rabbit distal colon.

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Relationships between stereospecificity and chemical structure (T)

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Mechanism of the facilitatory action of edrophinium in cat skeletal muscle (T)

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