

Slowly propagating motor activity in the isolated rabbit small intestine

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In addition to spontaneous myogenic activity, generated by the pacemaker net of interstitial cells of Cajal, and neurally mediated content dependent movements, in conscious animals spontaneous neural activity generates slowly migrating motor complexes. It has not been possible to establish how these three separate mechanisms of motor activity interact to produce the complex adaptive intestinal movements, because they do not occur together in isolated preparations. Purpose: To investigate if migrating motor complexes can be generated in isolated segments of intestine.

Methods: We investigated the spatio-temporal features of motor activity in isolated segments of intestine taken from 8 albino rabbits (killed by iv lethobarbital), cannulated and placed in a bath of oxygenated Krebs solution at 37°C. Spatio-temporal maps of changes in diameter were constructed from video recordings (Hennig *et al.*, 1999).

Results: Spontaneous pendulum activity of the longitudinal muscle generated aborally propagating contractions readily visible in the spatio-temporal maps (speed 21.11mm/s \pm 7.9 SD; frequency 12.9/min \pm 1.8 SD; n=9). Erythromycin lactobionate (10⁻⁶ M), shown to trigger migrating motor complexes (Marzio *et al.*, 1994), initiated irregular rings of circular muscle contractions, which slowly propagated aborally at speed of 1.9 \pm 0.4 mm/s (SD; n=7). Within the slowly propagating area of circular muscle contractions, the short rings of muscle contraction propagated at the speed of the myogenic contractions. Hexamethonium 100 μ M blocked the slowly propagating contractions (n=3).

Conclusions: Thus the isolated rabbit small intestine can be used to investigate the interaction between myogenic, propulsive movements and migrating complexes.

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