Characterization of adenosine receptors in canine colonic muscularis mucosae, longitudinal muscle and circular muscle

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1. The adenosine analog agonist 5'-N-ethylcarboxamidoadenosine (NECA) and the selective adenosine A\textsubscript{1} receptor antagonist 1,3-dipropyl-8-cyclopentylxanthine (DPCPX) were used in conventional organ bath experiments to attempt to classify adenosine receptors on canine colonic muscularis mucosae, longitudinal muscle and circular muscle.

2. NECA produced concentration-dependent relaxations in longitudinal and circular muscle precontracted with carbachol. The EC\textsubscript{50} value for longitudinal muscle was 5 µM and for circular muscle was 0.1 µM. Relaxation values were 45% and 37% of the maximum carbachol contraction for longitudinal and circular muscle respectively.

3. In muscularis mucosae NECA caused concentration-dependent contractions with an EC\textsubscript{50} value of 0.5 µM and a maximum contraction 59% of that caused by 32.5 mM KCl. DPCPX (10 nM and 40 nM) induced rightward shifts of the NECA concentration-response curve suggesting that adenosine A\textsubscript{1} receptors mediate contraction in canine colonic muscularis mucosae.

4. Results show that adenosine is important in the relaxation of colonic longitudinal muscle and circular muscle but further research is required to classify the receptor subtype mediating the relaxation response. Contraction of the colonic muscularis mucosae is mediated by adenosine A\textsubscript{1} receptors.