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Author	<b>Tomas Stenström</b>	
Title (English)	<b>Effects of luminal hypertonicity on some duodenal functions</b>	
Title (Swedish)		
Abstract	<p><b>Background and aim:</b> The duodenum is regularly exposed to contents with different osmolality, ranging from as low as 40 to as high as 1000 mOsmol/kg H<sub>2</sub>O, depending what we drink and eat. Previous studies have examined the responses to a hypotonic milieu. The aim of the present study was to examine the duodenal responses to luminal hypertonicity. <b>Methods:</b> The proximal duodenum was cannulated and perfused with a 350 mM NaCl solution for 30 min and the effects on duodenal wall contractions, mucosal bicarbonate secretion, net fluid flux and mucosal permeability studied in anesthetized rats, in the absence and presence of the selective cyclooxygenase-2 (COX-2) inhibitor parecoxib. <b>Results:</b> Perfusion of the duodenum with 350 mM NaCl induced a delayed nine-fold increase in mucosal permeability in COX-2 inhibited animals but had no effect in controls or in animals that did not respond to parecoxib with duodenal contractions. Further, luminal hypertonicity induced net fluid secretion, inhibited parecoxib-induced duodenal motility and reduced duodenal mucosal bicarbonate secretion. No contractions were seen in controls. Luminal hypertonicity increased bicarbonate secretion and induced net fluid secretion. <b>Conclusions:</b> The duodenal responses to luminal hypertonicity varied considerable between controls and COX-2 inhibited animals. Luminal hypertonicity has dual effects on bicarbonate secretion. The stimulatory effect is passive and due to solvent drag, while the inhibitory effect is due to inhibition of motility.</p>	
Keywords	Duodenum, hypertonicity, cyclooxygenase, parecoxib, <sup>51</sup> Cr-EDTA permeability, fluid flux	
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