A canine model for the study of gastric secretion and emptying after a meal

Kholeif, Hussein

Larach, Jorge

Thomforde, George M.

Dozois, Roger R.

Malagelada, Juan R.

Our aim was to develop a chronic canine model that would serve for the simultaneous measurements of postprandial gastric secretion and emptying by a double-marker dilution technique without artificially interfering with intragastric pH. A constant duodenal perfusion of a nonabsorbable marker allowed determination of luminal flow and total recovery of a second marker ingested with a meal. By calculating the amount of meal marker remaining in the stomach and its dilution (by repeat gastric sampling), we could determine the volume of gastric contents. Acid concentration in gastric samples was measured by titration ex vivo, and gastric acid content was calculated by multiplying the volume of gastric contents by titratable acidity. In this model, net acid gain at each sampling interval indicates acid output. Acid and volume losses are equivalent to duodenal acid load ad emptying rate, respectively. The method has been validated by virtually abolishing the endogenous secretion of acid (by in