Gastric emptying of water and isocaloric carbohydrate solutions consumed at rest

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This study assessed the gastric emptying rates of water and four isocaloric carbohydrate solutions in resting subjects. On five occasions, subjects ingested 400 ml of water or 6% solutions of glucose, sucrose, maltodextrin, and sucrose + glucose. The double-sampling technique was used to sample stomach contents immediately after ingesting and at 10-min intervals until emptying was complete. Comparisons of various criteria of gastric emptying (percentage of initial beverage volume remaining in the stomach, mean gastric emptying rates, and gross gastric volumes) provided somewhat different results. For example, when gastric emptying was portrayed as the percentage of initial beverage volume remaining in the stomach, the glucose and maltodextrin beverages exhibited significantly slower emptying characteristics; there were no differences in this measure among water, sucrose, and sucrose + glucose. Similar results were noted when changes in gross gastric volumes were compared. However, when the results are expressed as mean gastric emptying rates (in ml·min⁻¹), few differences are noted among beverage treatments. Gastric emptying rate was not influenced by the osmolality of the ingested solutions. The results of this study demonstrate the importance of using more than one measurement criteria to assess and compare gastric emptying characteristics.