

Biol. Pharm. Bull. **22 (12)**, 1293-1295 (1999)

Regulation of Gastric Mucosal Pepsinogen and Intrinsic Factor Contents, and Their mRNA Levels during Starvation and Refeeding in Rats

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Gastric mucosal pepsinogen and intrinsic factor (IF) contents, and their mRNA levels during starvation and refeeding were studied. During starvation for 4 d, gastric mucosal pepsinogen and IF contents significantly decreased, whereas pepsinogen and IF mRNA levels increased by 30 - 50%. These results suggested that the mRNAs of pepsinogen and IF could be preserved for a long time so as to prepare for refeeding. After ceasing the starvation for 72 h, gastric mucosal pepsinogen and IF contents were significantly decreased at 1 h after refeeding, and their mRNA levels were increased by 20 - 30% at 30 min after refeeding. We examined whether the refeeding-induced changes in gastric mucosal pepsinogen and IF contents and their mRNA levels could be reproduced by the exogenous administration of secretagogues. They were not found to be affected by the administration of each secretagogue during starvation for 72 h at 30 min. However, by the simultaneous administration of 2 or 3 secretagogues (carbachol, cholecystokinin octapeptide (CCK-8) or secretin), the contents of pepsinogen and IF decreased to 70 - 80% and 50 - 80% of the control, respectively. However, their mRNA levels increased to 140 - 160% and 120 - 135% of the control, respectively. Therefore, refeeding-induced changes in pepsinogen and IF contents and their mRNA levels were partially reproduced by exogenously administered secretagogues. This showed that food intake influences huge changes in neural, hormonal and physical conditions on the stomach. It was indicated that the secretagogues stimulated not only pepsinogen and IF secretion, but also had a tendency to increase their mRNA.