EFFECT OF ENDURANCE TRAINING ON PANCREATIC EXOCRINE RESPONSE TO CHOLECYSTOKININ (CCK) IN RATS

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The authors have found that endurance training increases pancreatic weight, protein content, and enzyme activity with hypertrophied acinar cells in rats. The purpose of the present study was to investigate the effect of endurance training on pancreatic exocrine response to CCK in rats. Female F344 rats were divided into control (C) and endurance training (T) groups. The trained rats were exercised for 60 min on a treadmill (final speed, 35m/min), 5 days a week, for 8 weeks. Food intake in the both groups was matched. The rats were anesthetized with sodium pentobarbital after an overnight fast and prepared with cannulae into the pancreatic duct. After 1-h basal collection with 0.9% NaCl (7.5ml/kg body weight /h) injected intravenously, CCK-8 (0.06956;g/kg body weight/h) was injected intravenously and pancreatic secretions were collected for the additional three 1-h periods.

Final body weight in the T group was slightly lower than in the C group, but not significantly. Pancreatic wet weight in the T group was significantly higher than in the C group. CCK-stimulated pancreatic juice secretion did not change significantly in both groups but there was a significant difference in CCK-stimulated pancreatic juice secretion between the C and T groups by 2-way ANOVA. There were significant increases in pancreatic protein and amylase secretions with CCK stimulation in both groups and CCK-stimulated pancreatic protein and amylase secretions in the T group were significant higher than those in the C group by 2-way ANOVA. Total pancreatic protein and amylase secretion with CCK administration during 3 hours in the T group were significant higher than those in the C group. These results suggest that the endurance training increases pancreatic exocrine secretion response to CCK and may improve CCK-resistance. CCK may play an important role in exercise-induced enhancement of the exocrine pancreas.

Keywords: Nutrition and Exercise, Endurance Training, Rats