Biliary and pancreatic secretions and intestinal acylglycerol acyltransferase activities in the rat. Y Mathieu, B Schumacher, A Bernard, P Besnard, H Carlier *(ENSBANA, Université de Bourgogne, Laboratoire de Physiologie de la Nutrition, Campus Universitaire, 1 Esplanade Erasme, 21000 Dijon, France)*

A significant decrease in intestinal lymph absorption of oleic acid was observed in bile and pancreatic juice diverted rats (unpublished results) simultaneously with an overload of the intestinal mucosa in exogenous lipids rich in free fatty acids. To elucidate the origin of the absorption impairment, acylglycerol acyltransferase activity involved in the esterification processes of long-chain fatty acids, by the monoglyceride pathway was studied in the rat with or without biliary secretion or either pancreatic and biliary secretions.

Six groups of rats were used: 2 group 1 intact animals; 2 group 2 bile-diverted animals; and 2 group 3 bile- and pancreatic juice-diverted animals. Immediately after surgery rats from both experimental and control groups were fasted for either 24 or 48 h with free access to a solution containing 0.7% sodium chloride and 0.2% potassium chloride.

During these fasting periods, acylglycerol acyltransferase activity was measured in microsomal preparations from the intestinal mucosa, according to the method of Rodgers (1969), consisting of the determination of CoA release from palmitoyl CoA in the presence of either monoglyceride or diglyceride.

Whatever the diversion carried out or its duration (24 or 48 h), the absence of biliary secretion or both pancreatic and biliary secretions provoked a significant decrease in acylglycerol acyltransferase activity. In comparison with the control groups of rats, the quantity of CoA released in the presence of monoglyceride decreased significantly by 55 and 51% in the 24-h bile-diverted rats and in the 24-h bile- and pancreatic-juice diverted rats respectively. In the presence of diglyceride and for the same 24-h period of diversion, this drop in enzyme activity amounted to 48% in the bile-diverted rats and 80% in the bile- and pancreatic-juice diverted rats. Values obtained in 48-h bile- and both bile- and pancreatic-juice diverted rats confirmed the particular effect of bile on mucosal acylglycerol acyltransferase activity.

Such observations explain the decrease in intestinal mucosal esterification processes observed in bile- and pancreatic juice-diverted rats 6 h after duodenal infusion of labelled oleic acid administered in the presence of monoglycerides.

Reference

Rodgers JB (1969) *J Lipid Res* 10, 427-432