

ascribed to intestinal fermentations and their consequences on liver lipid metabolism. When large intestine fermentation levels are low, elevating the rate of fecal steroid excretion seems to have limited effects on plasma lipid concentrations. In various pathophysiological situations, the intake of plant foods (rich in fibers or resistant starch) appears promising as it promotes cholesterol elimination from the body pool.

Comparison of metabolic responses to digestible and partly undigestible starches in healthy humans. L Achour, B Flourié, F Briet, C Franchisseur, F Borner, JC Rambaud, B Messing (*Inserm U 290, hôpital Saint-Lazare, 75010 and Éridania Béghin-Say, 75008 Paris, France*)

Starch is the main energetic fuel in the human diet. Most starches are extensively digested in the human small intestine. It is now technologically possible to modify starch in order to slow down its digestion in the small intestine. The digestion of technologically modified starches will start in the small intestine and continue in the colon, where its fermentation releases short chain fatty acids (mainly acetate) and gases (H_2 , CO_2). The metabolic consequences of this shift in starch digestion is unknown in healthy humans.

In this study, we measured certain metabolic indexes in healthy humans consuming a highly digestible corn starch (Dig S) in the small intestine and the same corn starch after retrogradation (Ret S).

Eight healthy volunteers were studied during two periods separated by 1 week. In each period, fasting volunteers consumed at 8:00 am a 425 kcal test meal in addition to 50 g of either the Dig S or Ret S. Blood and breath were sampled in the absorptive period hourly for 8 h. The same meal was given again the same day at 10:00 pm. At 8:00 am on the next morning, ie, 10 h after

the ingestion of the test meal, blood and breath were sampled in the fasting subjects hourly for 3 h ie, in the postabsorptive period.

In the absorptive period, after the ingestion of Dig S, the glycemic index and area under the insulin curve were higher, and blood glycerol concentrations were lower ($P < 0.05$) than after the ingestion of Ret S. In the postabsorptive period, after the ingestion of Dig S the respiratory quotient, $^{13}CO_2$ and H_2 excretion in breath, blood acetate concentrations and satiety index were significantly lower, whereas blood glycerol concentrations were higher ($P < 0.05$) than after the ingestion of Ret S.

In healthy humans, the digestion of Ret S is slow in the small intestine and its colonic fermentation continues 10 to 13 h after its ingestion. Compared to the highly Dig S, the shift in starch digestion induced by retrogradation leads to changes in metabolic responses: Ret S reduces the glycemic and insulinic responses in the absorptive period, and lipolysis in the postabsorptive period. This last effect may be related to an inhibitory action on the lipolysis of short chain fatty acids produced during the colonic fermentation of unabsorbed starch.

Chronic ingestion of a high fat cholesterol diet increased postprandial lipemia and atheroma deposition in New Zealand white (NZW) rabbits. C Juhel, C Dubois, M Senft, D Lairon (*Unité 130-Inserm, National Institute of Health and Medical Research, 18, avenue Mozart, 13009 Marseille, France*)

Several recent human studies have shown the existence of some links between altered patterns of postprandial lipemia and the risk of atherosclerosis. Nevertheless, the mechanisms involved are still unknown. We therefore performed the present study in the NZW rabbit, given its capacity to