Gut microbiota dysbiosis by high fructose intake induces cardiometabolic syndrome

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Fructose intake is associated with an increase in cardiometabolic syndrome, of which the mechanisms remain to be elucidated. We hypothesized that gut microbiota dysbiosis by high fructose intake induces cardiometabolic syndrome. Mice were given 20% fructose solution as drinking water for 4 weeks and then switched to tepid water for additional 8 weeks. Feces and blood were collected before and after fructose intake for 4 weeks, and then after tepid water for 8 weeks as well. Subgroup of mice were treated with antibiotic cocktails containing ciprofloxacin, metronidazole and vancomycin.

High fructose intake increased blood pressure, glucose, triglyceride and cholesterol and as well as body weight gain, which were normalized after tepid water drinking. The ratio of phyla Firmicutes to Bacteroidetes as well as species *Lactobacillus reuteri* and *Lactobacillus johnsonii* increased after fructose intake, which returned to original level after tepid water drinking. High fructose intake increased short chain fatty acids including acetate, butyrate, and propionate, which returned to original level after tepid water drinking. Antibiotic cocktails abrogated development of cardiometabolic syndrome.

There results suggest that gut microbiota dysbiosis by high fructose intake induces cardiometabolic syndrome.