Weekend binges just as bad for the gut as a regular junk food diet, study suggests

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The UNSW study was the first to compare how continuous or intermittent exposure to an unhealthy diet can impact the composition of the gut microbiota. Credit: iStock

Yo-yoing between eating well during the week and bingeing on junk food over the weekend is likely to be just as bad for your gut health as a consistent diet of junk, new UNSW research suggests.

The study, led by Professor Margaret Morris, the Head of Pharmacology at UNSW, examined the impact of yo-yo dieting on the gut microbiota of rats. The findings have been published in the journal *Molecular Nutrition and Food Research*.

The human gut consists of up to 100 trillion microbial cells that influence metabolism, nutrition and immune function. Disruption to the gut microbiota has been linked with gastrointestinal conditions such as inflammatory bowel disease and obesity.

Professor Morris said the study was the first to compare how continuous or intermittent exposure to an unhealthy diet can impact the composition of the gut microbiota.

"The findings indicate that intermittent exposure to junk food three days a week is sufficient to extensively shift the gut microbiota towards the pattern seen in obese rats consuming the diet continuously," Professor Morris said.

"A reduction in the diversity of the gut's microbiota and a loss of some of the beneficial biota is clearly not a good thing for health."

"While these findings are yet to be replicated in humans, those who are strict with their diet during the week may be undoing all their good work by hitting the junk food over the weekend."

The research team comprised Professor Morris and colleagues from UNSW's School of Medical Sciences, with collaborators from UNSW's Schools of Biological Sciences and Psychology.

They compared the abundance of microbiota in rats given continuous access to either a healthy diet or junk food with a group cycled between the two diets, healthy for four days and junk for three, over 16 weeks.

A range of metabolic markers, including body weight, fat mass, insulin and leptin, were also examined. At the end of the 16 weeks, rats on the cycled diet were 18% heavier than those on the healthy diet, while leptin and insulin levels in cycled rats were in between rats fed junk or healthy food.

The researchers found the microbiota of cycled rats was almost indistinguishable from rats fed a constant diet of junk, with both groups' microbiota significantly different from those in the rats fed a healthy diet.

The junk food diet also reduced the abundance of microbial species capable of metabolising flavonoids, which have been suggested to not only

assist in weight loss but also exert neuro-protective functions within the brain.

Cycled rats also showed large swings in food intake, consuming 30% more energy than those maintained on the healthy diet only. When cycled rats switched back to a healthy diet, they consumed half as much food as those maintained on a healthy diet only.

Professor Morris said a greater understanding of the role of energy rich foods and dieting on microbial changes is important, given the current obesity epidemic and the prevalence of yo-yo dieting in Western countries.

"The study suggests certain gut microbiota, including Ruminococcus and Blautia, may be promising targets for future therapeutic strategies to treat metabolic disorders," Professor Morris said.

The next phase of Professor Morris' obesity and diet-related research is looking at the links between the brain, behaviour and the gut's microbiota.

More information: *Molecular Nutrition and Food Research*, onlinelibrary.wiley.com/doi/10 … r.201500815/abstract

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