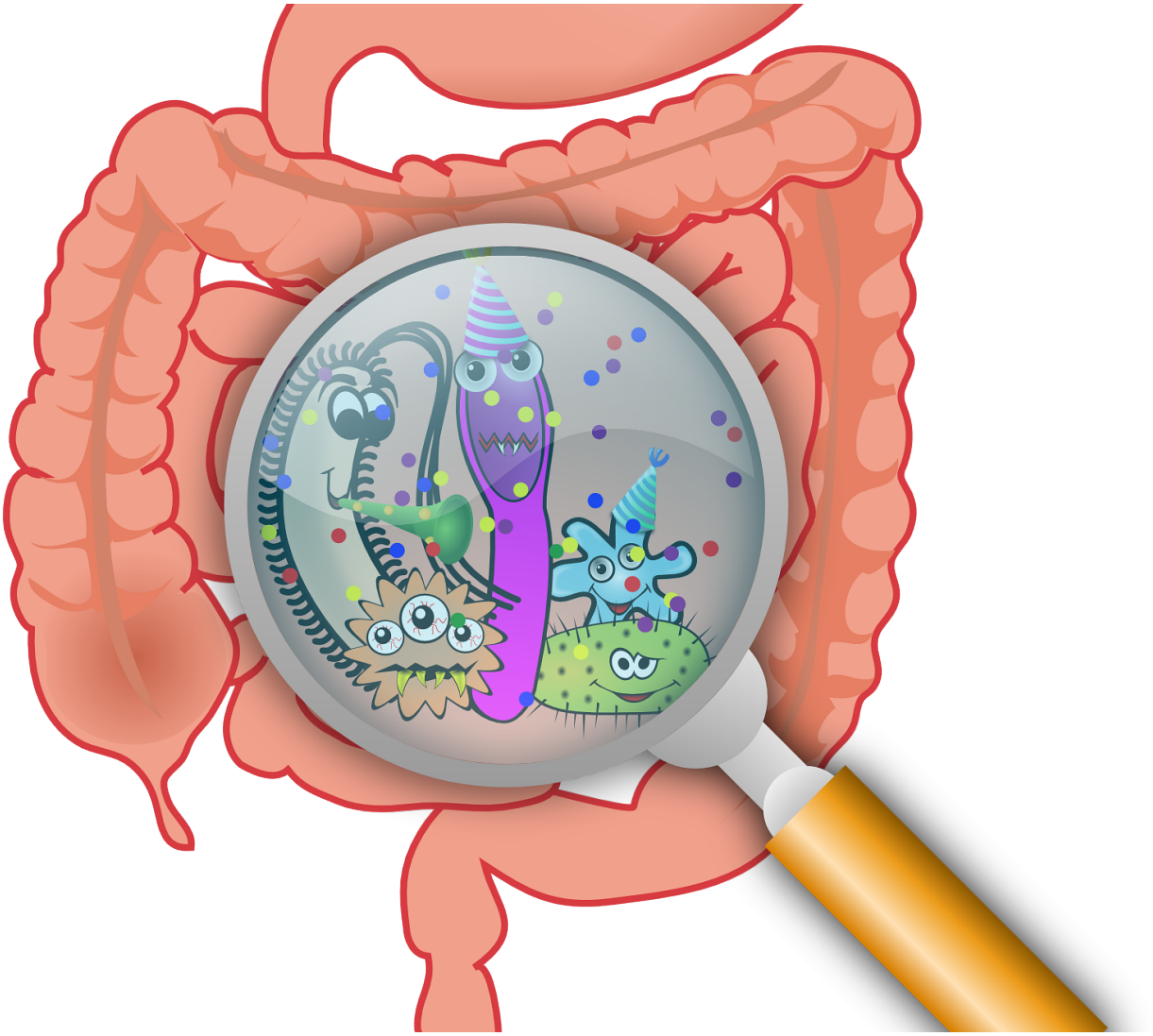
Eat high-fiber foods to reduce effects of stress on gut and behavior

August 1 2018



Credit: CC0 Public Domain

Eating high fibre foods may reduce the effects of stress on our gut and behaviour, according to new research published in *The Journal of Physiology*.

Stress is a significant health concern and can cause major changes in the gut and in the brain, which can cause changes in behaviour. In recent years there has been growing interest in the link between gut bacteria and stress-related disorders including anxiety, depression and irritable bowel syndrome.

Bacteria in the gut produce short-chain fatty acids (SCFAs), which are the main source of nutrition for cells in this region of the body1. Foods such as grains, legumes and vegetables, contain high levels of fibres and will stimulate the production of these SCFAs.

The study conducted by scientists at APC Microbiome Ireland at University College Cork and Teagasc Food Research Centre found that there was decreased levels of stress and anxiety-like behaviour when SCFAs were introduced.

Moreover, stress experienced over a prolonged period of time can affect the bowel by making the barrier between the inside of the gut and the rest of the body less effective and "leaky". This means undigested food particles, bacteria and germs will pass through the leaky gut wall into the blood and cause persistent inflammation. Treating with the SCFAs can also reverse this "leakiness".

These results provide new insights into mechanisms related to the impact of the gut bacteria on the brain and behaviour as well as gut health. Developing dietary treatments which target these bacteria will be important for treating stress-related disorders.

The study involved feeding mice the main SCFAs normally produced by

the gut bacteria and then subjecting them to stress. Using behavioural tests the mice were assessed for anxiety and depressive-like behaviour, stress-responsiveness, cognition and sociability as well as how easily material passes through the gut.

The exact mechanisms by which SCFAs facilitate their effect remain undetermined. SCFAs had no effect on an increase in body weight caused by stress therefore understanding why SCFAs only affect certain stress-induced effects will be important.

Professor John F. Cryan, the corresponding author on the research, commented on the findings 'There is a growing recognition of the role of gut bacteria and the chemicals they make in the regulation of physiology and behaviour. The role of short-chain fatty acids in this process is poorly understood up until now. It will be crucial that we look at whether short-chain fatty acids can ameliorate symptoms of stress-related disorders in humans.'

More information: Short-Chain Fatty Acids: Microbial Metabolites That Alleviate Stress-Induced Brain-Gut Axis Alterations, *Journal of Physiology* (2018). physoc.onlinelibrary.wiley.com … doi/10.1113/JP276431

Provided by The Physiological Society