

# Friendly bacteria love the humble apple

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Why does an apple a day keep the doctor away? New research published in the open access journal *BMC Microbiology* contributes to our understanding of why eating apples is good for you.

Microbiologists from the National Food Institute at the University of Denmark fed rats on a diet that was rich in whole apples, [apple](#) juice, purée or pomace, or put them on a control diet. They then analysed the microbial content of the rats' digestive systems to see if eating apples had any impact on the numbers of presumed 'friendly' [bacteria](#) in the gut.

"Certain bacteria are believed to be beneficial for digestive health and may influence the risk for cancer. We faced a well-known problem though - many types of bacteria cannot be easily cultured in the lab", said research leader Professor Tine Rask Licht. The team therefore used genetics instead of culture techniques to examine the [microbiology](#) of the intestines. 16S rRNA is a molecule that is only found in bacteria and its make up is unique to each species or strain. "By working out the sequences of 16S rRNA molecules in the rats' intestines and matching these to known bacterial profiles of 16S rRNA, we could determine which microorganisms were abundant in each group of rats", explained Licht.

So what was the verdict? "In our study we found that rats eating a diet high in pectin, a component of dietary fiber in apples, had increased amounts of certain bacteria that may improve intestinal health", said co-researcher Andrea Wilcks. "It seems that when apples are eaten regularly

and over a prolonged period of time, these bacteria help produce short-chain fatty acids that provide ideal pH conditions for ensuring a beneficial balance of microorganisms. They also produce a chemical called butyrate, which is an important fuel for the cells of the intestinal wall".

Of course, further research is needed to determine whether the digestive system of humans responds to apples in the same way as rats, but these findings certainly suggest that Europe's favourite fruit has a well-deserved place in our 5-a-day.

**More information:** Effects of apples and specific apple components on the cecal environment of conventional rats: role of apple pectin, Tine R Licht, Max Hansen, Anders Bergstrom, Morten Poulsen, Britta N Krath, Jaroslaw Markowski, Lars O Dragsted and Andrea Wilcks, *BMC Microbiology* (in press), [www.biomedcentral.com/bmcmicrobiol/](http://www.biomedcentral.com/bmcmicrobiol/)

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