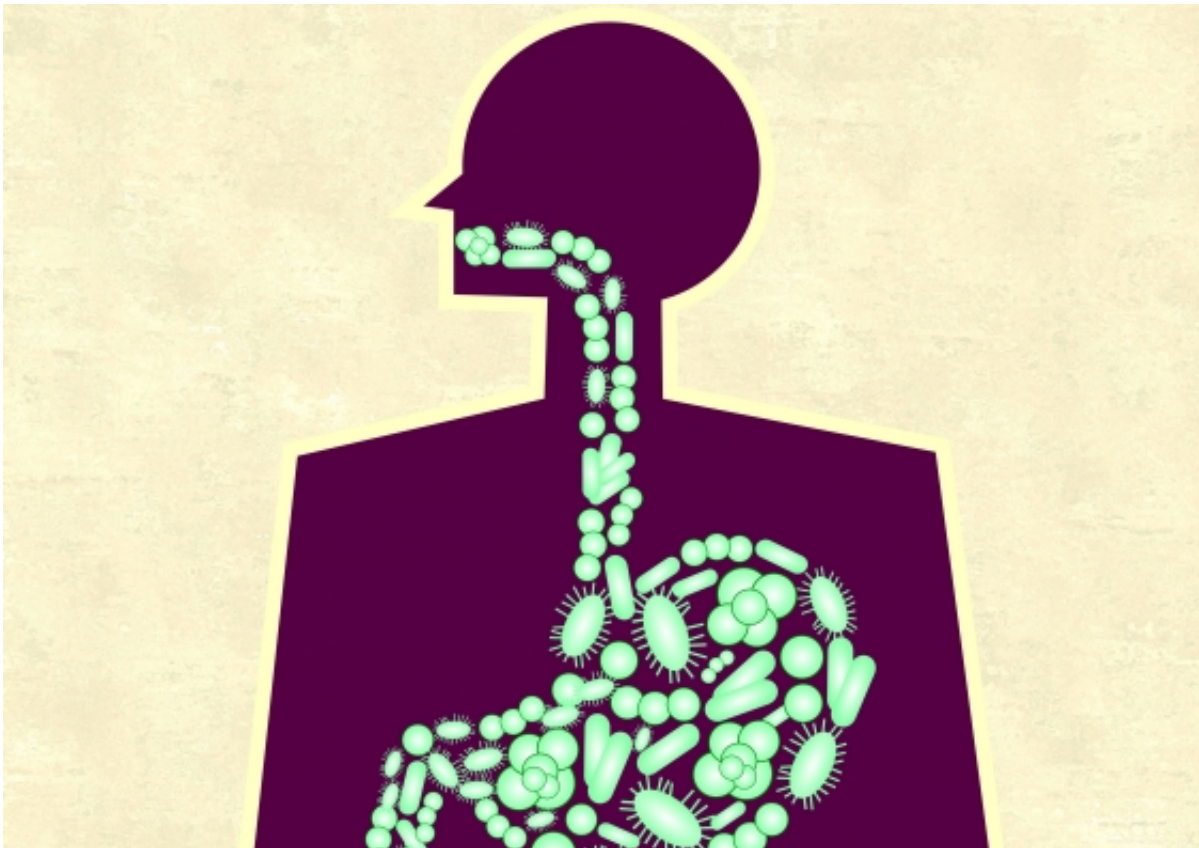


High-fat diet hurts the microbiota in the oesophagus

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Credit: University of New South Wales

UNSW researchers have observed how microbiota in the oesophagus is affected by a high-fat diet, depleting known beneficial bacteria and increasing the levels of "bad" bacteria.

The team's paper, published in *Scientific Reports*, found a high-fat [diet](#) affects the microbiota in the oesophagus of rats.

First author Dr Nadeem Kaakoush says two other interesting things were observed.

"The [high-fat diet](#) drops the levels of *Lactobacillus* species, well known to be beneficial and form part of different probiotics," he says.

"It gives us the idea that maybe we can counteract through probiotics the effects of unhealthy diets and obesity in the oesophagus as they are known risk factors for oesophageal disease.

"The other interesting observation was the increase of *Fusobacterium* species given that they have been associated with various diseases."

Fusobacterium has been linked to oral disease like periodontitis, as well as appendicitis, inflammatory bowel diseases and, more recently, colorectal cancers.

Now, Dr Kaakoush says they have a reason to look more closely at whether they also play a role in oesophageal adenocarcinoma, and what's known as the "cascade" of conditions that precede it.

Gastro-oesophageal reflux disease (GORD) occurs when stomach acid backs up into the oesophagus, over time damaging the oesophagus walls.

This can cause the oesophageal cells to be replaced by cells more like acid-resistant intestinal cells, a condition called Barrett's oesophagus.

Oesophageal cancers are uncommon, occurring in 1300 people in Australia each year. However, the incidence of oesophageal adenocarcinoma is rising.

Dr Kaakoush, a Cancer Institute NSW Career Development Fellow, says his team has started observing the microbiome in the human oesophagus.

A study from Japan in late 2016 has already established that *Fusobacterium* in the oesophagus of oesophageal [cancer](#) patients is associated with shorter survival times.

"What we're interested in now is seeing if we increase the *Lactobacillus* species in the oesophagus, whether that is beneficial, and if we increase *Fusobacterium* in the oesophagus, does that have negative consequences?" he says.

"The other thing is the damage to the lining of the [oesophagus](#), and if we can connect that with the presence of *Fusobacterium*. That would be a pretty good indicator for us to say these bacteria are involved in this cascade."

More information: Nadeem O. Kaakoush et al. Cross-talk among metabolic parameters, esophageal microbiota, and host gene expression following chronic exposure to an obesogenic diet, *Scientific Reports* (2017). [DOI: 10.1038/srep45753](https://doi.org/10.1038/srep45753)

Provided by University of New South Wales

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