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Mouth bacteria may trigger bowel cancer

The mouth is home to millions of bacteria

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Researchers say they have uncovered how bacteria may set off a chain reaction leading to bowel cancer.

Fusobacteria, commonly found in the mouth, cause overactive immune responses and turn on cancer growth genes, two US studies reveal.

The microbes had been linked with colorectal cancer before but it was not known whether they were directly involved in tumour growth.

The early findings are published in the journal Cell Host & Microbe.

In addition to potential new treatments, the discovery could lead to better early diagnosis and prevention, experts hope.

The first study, carried out by Harvard Medical School researchers, showed that fusobacteria were present in high numbers in adenomas - a benign bowel growth that can become cancerous over time.

The same researchers also did tests in mice showing that the bacteria speeded up the formation of colorectal tumours by attracting special immune cells that invade and set off an inflammatory response which can lead to cancer.

The second study, carried out by researchers at Case Western Reserve University, showed that fusobacteria had a molecule on their surface which enabled them to attach to and invade human colorectal cancer cells.

The molecule - FadA - then switches on cancer growth genes and stimulates inflammatory responses to promote tumour formation.

Higher levels
A synthetic compound which blocked FadA was found to completely halt the process, raising the possibility it could one day be used as a preventive treatment.

The Case Western team also confirmed that FadA levels were much higher in tissues from patients with adenomas and colorectal cancer compared with healthy individuals.

Dr Wendy Garrett, lead author of Harvard study, said: "Fusobacteria may provide not only a new way to group or describe colon cancers but also, more importantly, a new perspective on how to target pathways to halt tumour growth and spread."

She added that in the future the presence of the bacteria in a tumour may be used to guide treatment decisions.

Prof Yiping Han who carried out the second study added: "We have proven there is an infectious component to colorectal cancer.

"We have shown that FadA is a marker that can be used for the early diagnosis of colorectal cancer and identified potential therapeutic targets to treat or prevent this common and debilitating disease."

Oliver Childs of Cancer Research UK said: "Our bodies contain many hundreds of microbes, many of which are beneficial and protect us against disease. But some can cause harm and this latest research gives compelling evidence that fusobacteria contribute to the development of certain bowel cancers by helping the cancer cells to grow.

"If larger studies confirm this work, a potential next step will be to develop tests to spot people at higher risk of bowel cancer or drugs that eradicate the effects of the bacteria."