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Research suggests link between imbalanced gut microbiome and systemic sclerosis

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Americans and Norwegians with systemic sclerosis had higher levels of bacteria that can cause inflammation and lower levels of bacteria that are believed to protect against inflammation compared with healthy people, according to a new study by researchers from UCLA and Oslo University.

Study participants from United States, however, had a greater imbalance between the "good" and "bad" gut bacteria compared with the participants from Norway. The researchers suspect that the difference is because of a combination of genetics and diet.

This study is the first to examine gastrointestinal bacterial composition in two independent groups of people with systemic sclerosis. Systemic sclerosis, also known as scleroderma, is an autoimmune disease affecting the body's connective tissue. It is characterized by a hardening and scarring of skin and can progress to inflammation and scarring in the organs such as kidneys, heart, lungs and gastrointestinal tract. Previous UCLA-led research detailed a link between the disease and the imbalance in the gut microbiome and suggested that this imbalance contributed to scleroderma's symptoms.

The researchers studied 17 adults with systemic sclerosis from UCLA, 17 from Oslo University Hospital, and 17 healthy adults as the control group. All participants provided stool specimens, which the researchers tested to determine the type and abundance of specific bacteria present. The people with systemic sclerosis had significantly lower levels of gut

bacteria believed to protect against inflammation, such as Bacteroides (UCLA and Oslo), Faecalibacterium (UCLA) and Clostridium (Oslo). They also had significantly higher levels of bacteria that promote inflammation, such as Fusobacterium (UCLA), compared with those in the control group. Increased levels of Clostridium was associated with less severe gastrointestinal tract symptoms in the groups of people with systemic sclerosis from UCLA and Oslo.

The findings may help to shed light on the cause of systemic sclerosis. They also suggest that restoring gut bacterial balance though diet modification, probiotics and possibly fecal transplantation may reduce gastrointestinal symptoms and improve quality of life in patients with systemic sclerosis.

The study is published in the peer-reviewed *BMJ Open Gastroenterology*.

Provided by University of California, Los Angeles