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Study uncovers new metabolic capabilities of gut bacteria

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By **Pooja Yadav** | April 12, 2021



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The study has been published in ’The ISME Journal’

An international team of scientists led by microbiologists Alexander Loy from the University of Vienna and David Schleheck from the University of Konstanz has uncovered new metabolic capabilities of gut bacteria.

For the first time, the researchers have analysed how microbes in the gut process the plant-based, sulfur-containing sugar sulfoquinovose. Sulfoquinovose is a sulfonic acid derivative of glucose and is found in all green vegetables such as spinach and lettuce.

Their study discovered that specialised bacteria cooperate in the utilisation of the sulfosugar, producing hydrogen sulfide. This gas – known for its rotten egg smell – has disparate effects on human health: at low concentrations, it has an anti-inflammatory effect, while increased amounts of hydrogen sulfide in the intestine, in turn, are associated with diseases such as cancer. The study has been published in ’The ISME Journal’.

Diet and the gut microbiome

With the consumption of a single type of vegetable such as spinach, hundreds of chemical components enter our digestive tract. There, they are further metabolized by the gut microbiome, a unique collection of hundreds of microbial species. The gut microbiome thus plays a major role in determining how nutrition affects our health.

Sulfosugars from green plants and algae

Sulfoquinovose is a sulfonic acid derivative of glucose and is found as a chemical building block primarily in green vegetables such as spinach, lettuce, and in algae. From previous studies by the research group led by microbiologist David Schleheck at the University of Konstanz, it was known that other microorganisms can in principle use the sulfosugar as a nutrient. In their current study, the researchers from the Universities of Konstanz and Vienna used analyses of stool samples to determine how these processes specifically take place in the human intestine.

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