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Impact of Resistant Dextrin on the Microbiota and Homeostasis of Intestinal Gases

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DESCRIPTION

Previous studies have demonstrated the prebiotic benefits of a resistant dextrin soluble fibre as well as its positive effects on satiety and blood glucose regulation. Our goal was to show how the continuous administration of resistant dextrin affected gut microbiota composition, digestive symptoms, and gas production in the intestine. For four weeks, resistant dextrin was administered to 20 healthy volunteers. The following outcomes were assessed before, during, and two weeks after administration: Gas expulsions through the anals during the day; digestive perception, girth, and gas production in response to a typical meal; digestive and sensory responses to a comfort food; by magnetic resonance, the volume of biomass in the colon; shotgun sequencing of the taxonomy and metabolic processes of the faecal microbiota, metabolomics of urine When dextrin was administered, there was initially a rise in gas production and symptoms connected to gas in the colon.

A decline followed, which grew worse after dextrin was halted. Dextrin increased the amount of colonic biomass, which led to changes in microbial metabolism and composition, including an increase in species that produce short-chain fatty acids and adjustments to the metabolism of bile acids and biotin. These results suggest that soluble fibre consumption alters the gut microbiota to fermentative pathways with reduced gas production.

The aetiology of symptoms like borborygmi, stomach bloating, distension, and pain associated with gas, such as borborygmi, irregular gas evacuation, is frequently discussed in clinical practise. However, it's unclear whether intestinal gas and adverse effects are related. The microbiota's fermentation of food components that bypass small intestine absorption and enter the colon is primarily what causes intestinal gas to be produced. As a result, two factors dietary substrate availability and microbial metabolic activity determine the intestinal gas metabolism. Prebiotics are substances that host bacteria employ only when they want to boost their own health.

Clinical investigations showed that it is well tolerated, has health advantages for blood glucose control, satiety, sustained energy, and gut health, as well as the favourable modification of gut microbiota. Resistant dextrin may disrupt gas metabolism in the colon, which may impact digestion, however this has not been established. Resistant dextrin administration, according to our hypothesis, would influence the composition and metabolic activity of the gut microbiota as well as the balance of intestinal gas. Our aim was to investigate the effects of long-term resistant dextrin administration on gas generation, gastrointestinal symptoms, and the metabolism and make-up of the gut microbiota. In order to evaluate the effects of dextrin during, after, and after administration, we created a pilot research.

An administration of a resistant dextrin soluble fibre results in adaptation of the intestinal microbiota and intestinal gas homeostasis that persists after the administration period. Targeted and untargeted metabolomics investigations suggest that dextrin ingestion may boost short-chain fatty acid synthesis, which is confirmed by the increase in several SCFA-producing species. Furthermore, our research indicated that dextrin administration had a minor impact on the metabolism of bile acids and biotin. A genome-wide investigation of the faecal microbiota revealed the modulatory influence of resistant dextrin on a number of bacteria that produce SCFA. As a result, the possible advantages brought on by dextrin may be attributed to species that produce butyrate that have anti-inflammatory properties, such as Eubacterium eligens. A wide range of bacterial metabolic functions, including the metabolism of ribonucleotides, were affected by resistant dextrin in a similar manner.

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CONFLICT OF INTEREST

The author declares there is no conflict of interest in publishing this article has been read and approved by all named authors.

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