

Bacteriophages: Are they an overlooked driver of Parkinson's disease?

June 10 2018

In the first study of its kind, researchers from the New York-based Human Microbiology Institute have discovered the role certain bacteriophages may play in the onset of Parkinson's disease (PD). The research is presented at ASM Microbe, the annual meeting of the American Society for Microbiology, held from June 7th to June 11th in Atlanta, Georgia.

The researchers, led by George Tetz, M.D., Ph.D., Human Microbiology Institute, showed that the abundance of lytic *Lactococcus* phages was higher in PD [patients](#) when compared to healthy individuals. This abundance led to a 10-fold reduction in neurotransmitter-producing *Lactococcus*, suggesting the possible role of phages in neurodegeneration. Comparative analysis of the bacterial component also revealed significant decreases in *Streptococcus* spp. and *Lactobacillus* spp. in PD.

Lactococcus are regulators of gut permeability and are enteric dopamine producers, which plays a primary role in PD. "The depletion of lactococcus due to high numbers of strictly lytic phages in PD patients might be associated with PD development and directly linked to dopamine decrease as well as the development of gastrointestinal symptoms of PD," said Dr. Tetz.

To explore bacterial and bacteriophage community compositions associated with PD, the researchers used shotgun metagenomics sequencing data of fecal microbiome from 32 patients with PD and 28 controls.

The results indicate that the decrease in Lactococci in the PD patients was due to the appearance of strictly lytic, virulent lactococcal phages belonging to the c2-like and 936 groups that are frequently isolated from dairy products. These results open a discussion on the role of environmental phages and phagobiota composition in health and disease.

"Bacteriophages have previously been overlooked as pathogenic factors, and the study points out their pivotal role in pathogenesis," said Dr. Tetz. Future research is needed to explore bacterial viruses as a diagnostic and treatment target for therapeutic intervention.

Provided by American Society for Microbiology

Citation: Bacteriophages: Are they an overlooked driver of Parkinson's disease? (2018, June 10) retrieved 4 May 2024 from

<https://medicalxpress.com/news/2018-06-bacteriophages-overlooked-driver-parkinson-disease.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--