Can Bacteriophage Be Used to Treat Bacterial Imbalances Associated with IBS and IBD?

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The objective of this project was to test the feasibility of a new treatment option for people with IBS and IBD. Scientific research has recently found a connection between IBS and IBD and bacterial imbalances of the intestine. Research suggests this may be the root cause of both conditions. In cases of IBS and IBD, essential bacteria such as Bifidobacterium and Lactobacillus have a relatively low population, while harmful bacteria, such as E. coli and Clostridium, are extremely prevalent. Since the imbalance involves not only large populations of harmful bacteria, but beneficial bacteria in scarce numbers, bacteriophage may be an ideal therapeutic, since they only target specific bacteria. One potential issue is that there is not sufficient research to determine whether the bacteriophage will be effective in the anaerobic environment and pH levels of the intestine. In this experiment, E. coli and Clostridium sporogenes were grown in anaerobic conditions at pHs of 5,6, and 7, and a temperature of 37°C, to mimic the environment of the intestine. Then, half of these cultures were injected with targeted bacteriophage (MS2 for E. coli and B1 for Clostridium). The results indicate that the bacteriophage are effective at every pH level tested, but were least effective at pH 6. These promising results suggest that bacteriophage could be used as a treatment for IBS and IBD, since it should be able to successfully infect and kill bacteria in the intestinal conditions. Beyond the medical applications, the data suggests the possibility of discoveries new to science.