Lactobacillus vs. Amoxicillin: Beneficial Bacteria as a Treatment for Sinus Infections

Millard, Abigail

Lactobacillus is a beneficial bacteria that is naturally present in the human digestive tract. It is used in probiotics and kills harmful bacteria that are responsible for digestive problems, such as E. coli. Recent studies have proposed introducing lactobacillus into other areas of the micro biome for treating bacterial infections. The purpose of this project was to test lactobacillus as a treatment for sinus infections, compared to a typical antibiotic treatment of amoxicillin. Treatments were tested on Staphylococcus aureus, for 24 and 48 periods. Results were taken from colony counts in a liquid culture and biofilm. Biofilms demonstrate the growing problem of antibiotic resistance. In a bacterial infection, the bacteria form a layer that is more difficult for antibiotics to penetrate. It was hypothesized that the lactobacillus treatment would be more effective than amoxicillin in decreasing the growth of S. aureus, because S. aureus would build up resistance to the antibiotics. Contrary to the hypothesis, the results showed that the lactobacillus treatment increased S. aureus growth. The growth increased consistently, by 80-90% during each treatment period. Further research found that increased growth was due to the metabolic waste byproduct of lactobacillus, lactic acid. S. aureus feeds off of lactic acid, causing a spike in its growth when mixed with lactobacillus. In the future, more research will be done into beneficial bacteria that are naturally present in the sinuses. The principle of lactobacillus as used in probiotics is to encourage growth of a beneficial bacteria that is already existent in the gut micro biome. This same principle could be used in the sinus micro biome, rather than introducing bacteria from a different area of the body.

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