The Effects of Microplastics From Menstrual Products and Their Effects on the Vaginal Microbiome

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Menstrual products are composed of harmful microplastics. Tampons specifically contain microplastics such as polyethylene (PE) which have been seen to interfere with biological functions. Bacteria in the vaginal microbiome, such as Lactobacillus acidophilus, carry out functions such as aiding with conception, fertilization, and protecting against diseases. The purpose of our study was to see whether PE leached from menstrual products affect the growth of L. acidophilus, which could cause dysbiosis in the vaginal microbiome. To carry this out, we cultured L. acidophilus in liquid cultures. From there, we set up conicals with varying amounts of PE. After adding bacteria to these conicals and allowing them to grow, we measured absorbance of the samples with a spectrophotometer at OD 595 nm. Our results showed a general regression in absorbance across our samples from 0 g to 2.5 g of PE. We noticed that this decrease was not linear with plateaus from 0 - 0.03125 g, 0.0625 - 0.25 g, 0.5 - 1.5 g, and 2.5 g. We also noticed a minuscule increase from 0.625 to 1.5 g samples with a 0.007 A.U. increase. Even with the small increase there, we concluded that there was a general decrease in L. acidophilus when it was exposed to PE, which could cause dysbiosis in the vaginal microbiome. The clustered data suggests that there was a nonlinear biological response to the microplastics. With this research, we hope to raise concerns on adding microplastics to menstrual products.

Awards Won:
The Knowledge Society: 3rd Place