

Probiotics Could Help Combat Antibiotic Resistance

In recent years, the number of antibiotic-resistant bacteria has escalated. Widespread concerns about methicillin-resistant *Staphylococcus aureus* (MRSA), a bacteria that is resistant to almost all antibiotics, have brought this issue to the forefront of the national agenda.

Professor Michael Chikindas and his research team in the Department of Food Science are developing alternative therapies that could reduce the use of antibiotics. They are focusing on natural antimicrobial proteins that safely target specific pathogenic microorganisms in both humans and animals. This relatively new avenue of research largely involves so-called probiotics (health-promoting bacteria) and the natural antimicrobial substances they produce. Many of these compounds are proteins with the major function of killing other closely-related bacteria as a form of self-defense.

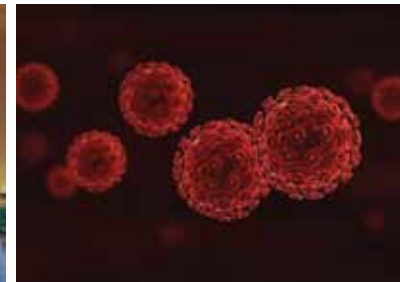
Chikindas has identified three of the proteins that are capable of killing *Gardnerella vaginalis*, the microbe largely responsible for bacterial vaginosis (BV), which is a specific infection in women. BV is a serious condition that can lead to complications with pregnancy, the development of pelvic inflammatory diseases, and an elevated risk of contracting HIV infection. In cases of HIV infection, BV directly accelerates the progression of the disease. Currently, only 75 percent of the BV cases are effectively treated with antibiotics. Of the women treated for BV, about 30 percent return with pathogens that acquired antibiotic resistance.

Chikindas' pioneering research is demonstrating the ability of the proteins to prevent the growth of *G. vaginalis*, while simultaneously leaving the healthy vaginal microflora and vaginal tissues unharmed. Preliminary data on one of the proteins has also suggested it has potent spermicidal activity, strengthening its position as a quality addition to personal care applications. Further research will investigate the effect of using each bacteria-killing protein in combination with a variety of natural antimicrobial substances to boost their overall effectiveness.

Your support of Dr. Chikindas' research can help stem the tide of antibacterial resistance. Please contact The Office of Development at 732-932-9000, ext. 576 or development@sebs.rutgers.edu.

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