



This project has provided evidence of the negative effects common prescription and over-the-counter drugs can have on important digestive microbiota, with special ramifications for health of elderly Americans.

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## Understanding the Health Impact of Bifidobacterium Microbiota on Longevity

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### Who cares and why?

Treatments of age-related diseases are an essential part of life for the elderly in the United States. Recent estimates indicate that 75 percent of people aged 65 or older take at least one prescription medication or over-the-counter drug. Developing preventive and supportive health care to improve immunity to disease can help improve the health of elderly people and reduce health care costs. Methods aimed at improving immunity could involve diets that include functional foods, including probiotics and prebiotics. Probiotics are healthful digestive microbes. Prebiotics are dietary fibers and nutrients that help probiotic microbes flourish in the digestive tract. It has been shown that probiotics can improve immunity and prevent several diseases in the elderly. However, the survival of probiotics in the gastrointestinal tract is important to ensure they deliver health benefits. Therefore, the objective of this project was to determine the effect of commonly administered medications on the viability and functionality of probiotics.

### What has the project done so far?

Researchers at North Carolina Agricultural and Technical State University exposed seven strains of bifidobacteria to several drugs that are in common use by the elderly: Aleve, aspirin, glipizide, lisinopril and Tylenol. These drugs are commonly used to treat arthritis, high blood pressure and diabetes. Bifidobacteria occur



naturally in the human digestive tract. Our in-vitro findings indicated that these medications have significant effects on the survival and functionality of bifidobacteria. In addition, our results show that the enzymatic production of galactoside and glucoside by probiotics was inhibited due to the presence of blood pressure medicines such as Capoten. Results also indicate that some common medications such as aspirin and Aleve can reduce the adhesion properties of probiotics. Adhesion of probiotics in the human gut is important for gaining the full health benefits from probiotics.

Our findings indicated that commonly administered medications have a negative effect on the viability and functionality of probiotics. Common food sources of probiotic bacteria for consumers include fluid milk and yogurt. The provided information about the health benefits of probiotics and the interaction between medical drugs and probiotics could result in beneficial changes in the dietary habits of U.S. citizens.

## Impact Statement

This project indicates that prescription and over-the-counter drugs that are commonly taken by elderly Americans can negatively affect digestive flora that are important to good overall health.

### What research is needed?

The project team is planning to establish capacity collaboration among different departments at N.C. A&T State University to expand research related to animal and human health. To our knowledge, this is the first study that addresses probiotics and common medicinal treatments. It is anticipated that this project will enable the principal investigator to establish new research in the area of probiotics for human health in a practical research model using in-vitro experiments, mathematical modeling and animal models.

### Want to know more?

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