Toward Safer Foods For Human Consumption With Anthrax Protection

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BOSTON, Aug. 26, 2010 - An antibacterial enzyme found in human tears and other body fluids could be applied to certain foods for protection against intentional contamination with anthrax, scientists reported here today at the 240th National Meeting of the American Chemical Society (ACS).

"Data from this study could be used in developing safer foods for human consumption," said Saeed A. Khan, Ph.D. "The data from our study shows that lysozyme application has the potential to eliminate anthrax producing bacteria in processed foods."

Khan and colleagues knew from almost a century of lysozyme research that the enzyme kills certain bacteria. It does so by destroying bacteria cell walls, the rigid outer shell that provides a protective coating. Lysozyme was discovered in 1922 by Alexander Fleming during the search for antibiotics that eventually led to penicillin. A drop of mucus (which contains lysozyme) from Fleming's nose fell into a culture dish of bacteria. Much to his surprise, it killed the bacteria. Since then, scientists have shown that lysozyme has far-reaching roles in protecting against disease-causing microbes. Found in many body fluids, it sometimes is called "the body's own antibiotic." In breast milk, for instance, lysozyme protects infants from certain infections. The whites of hens' eggs have large amounts of the enzyme to protect the developing chick from infections.

Until the new study that was published by Dr. Khan and his colleagues, however, it was not known if lysozyme could also be effective against Bacillus anthracis, the microbe that causes anthrax. Khan and colleagues, who are with the National Center for Toxicological Research in Jefferson, Ark., used a surrogate bacterial strain that is considered as a stand-in for anthrax in their research because it behaves in more or less similar fashion as the actual anthrax strain, except that it does not cause the disease. They studied the spore's survival in hens' egg white, and found that the lysozyme in egg white was very effective in killing anthrax spores. Lysozyme also showed some activity in killing spores added to ground beef and milk.

"Based on our results, it looks like that lysozyme could be used to either slow down or prevent the growth of an avirulent form of the bacterium Bacillus anthracis that causes anthrax," Khan said. "More research is needed on other types of foods, including ground beef, milk, fruit juices, and vegetables."

SOURCE [2]

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