AAT drug may prevent deadly infections

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Ben Gurion University of the Negev (BGU) researchers have discovered that alpha1-antitrypsin (AAT) could prevent deadly infections in immune system-compromised patients.

Their study, reported in the *Journal of Infectious Diseases* by Dr. Eli C. Lewis and his team of BGU researchers, examined the effectiveness of AAT treatment in halting bacterial colonization and spread. Bacterial infections can rapidly become severe and cause sepsis, multiple organ dysfunction and death, even with available antibiotics.

In the study, mice were directly infected with highly lethal live bacteria, sepsis and peritonitis. The initial aim was to exclude the possibility that AAT, an anti-inflammatory agent, might worsen infections in patients who are being treated with the drug. AAT is currently being used to treat new clinical indications like type 1 diabetes, emphysema and graft versus host disease (a condition that occurs with transplant rejection).

Instead, the BGU research group unexpectedly discovered that the treated mice combatted these lethal infections better than the untreated mice. The bacteria directly introduced were practically eradicated by AAT therapy within 24 hours. According to the researchers, "There were barely enough bacteria left to grow colonies on a plate."

"Imagine if weak patients receive AAT prior to prolonged hospitalization in bacteria-rich hospital facilities," says Dr. Lewis, head of the clinical islet laboratory at BGU. "Considering the current frustration with antibiotic development rate compared to bacterial

resistance rates, the clinical implications are immense. There is significant demand for the availability of a safe, preemptive, readily accessible approach."

The molecule AAT is naturally produced in the human liver, particularly during inflammatory bouts. It has been known to reduce excessive inflammation and preserve injured tissues.

The BGU team is now working on deciphering the mechanisms behind these favorable outcomes, which will be published in future studies.

Provided by American Associates, Ben-Gurion University of the Negev