The process also prevents the bacteria from entering the bloodstream where it may or may not be safe for the patient, she added.

The research team found that applying LgCS secretions to the wound inhibited Pseudomonas aeruginosa growth, prevented biofilm development and eliminated any partially developed biofilm. Biofilms are sticky substances that form whenever bacteria attaches to surfaces in moist conditions like thermal (burn) injuries.

The study also showed that a single injection of LgCS secretions administered after thermal injury and Pseudomonas aeruginosa infection reduced mortality to 0% and prevented sepsis in mice. A second injection administered 24 hours later eliminated Pseudomonas aeruginosa from the wound.

In addition, and using another model of wound infection that does not involve thermal injury, the investigators discovered that treating an infected wound using either LgCS or ceftazidime significantly reduced the mortality rate in mice, and treating the infected wound using a combination of LgCS and ceftazidime eliminated mortality in mice. Ceftazidime is an antibiotic used to treat meningitis and several other infections.

Armed with these results, Hamood said the next step is to characterize the inhibitory factor that seems to produce such promising results. For this study, his team harvested everything the LgCS secreted and concentrated it by 20 times. Now they must uncover the nature of the inhibiting factor and learn for certain if it’s a protein or an enzyme.

“Right now, it's just a crude product, and we proved that this crude product is very special,” Hamood said. “There's a phenomenon occurring, but now we need to discuss and describe what's causing it, and even further, describe the mechanism of action to that wound. That’s where I'm going next.”

In addition to Lenzmeier, Hamood’s collaborators included Gary Ventolini, M.D., TTUHSC regional dean and professor of obstetrics and gynecology; TTUHSC graduate student Aatiya Ahmad; TTUHSC Research Associate Nithya S. Mudaliar, M.S.; Lt. Cmdr. Mark P. Simons, Lt. Chase Watters and Joshua A. Stanbro from the Naval Medical Research Center; John C. Zak, Ph.D., professor, associate dean and chair for the Department of Biological Sciences at Texas Tech University; and Jane A. Colmer-Hamood, Ph.D., TTUHSC associate professor.