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Nanoparticles for Sepsis Treatment

Bio-compatible nanoparticles offer a safe and systemic solution for sepsis treatment by clearing bacterial endotoxins and preventing excessive inflammation, demonstrating 100% survival in animal models.

Researchers at Purdue University have developed bio-compatible nanoparticles to treat sepsis systemically. The Centers for Disease Control and Prevention estimate that 33 percent of hospital mortality in the United States is due to sepsis, a disease that occurs when bacterial endotoxins circulate in the bloodstream and trigger the immune system to attack the body. Available treatments largely rely on targeting the bacteria or providing life support, none of which directly clear endotoxins. Others have proposed treatments based on different nanoparticle systems; however, those technologies are not suitable for systemic treatment and would require invasive techniques of extracorporeal blood cleansing. Purdue researchers designed a new solution to sepsis, which can be administered systemically and safely. In mouse models of sepsis, 100 percent of the animals treated with the new nanoparticle system survived while none of the animals in the control group survived. Compared to other exploratory solutions to combat sepsis, the Purdue technology promises a safe and convenient option for both patients and physicians.

Advantages:

-Inactivation of endotoxin

-Prevention of excessive inflammation

-Protection from polymicrobial peritonitis

Potential Applications:

-Sepsis treatment

Publications:

Nanocapsules modify membrane interaction of polymyxin B to enable safe systemic therapy of Gram-negative sepsis

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Category

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Pharmaceuticals/Drug Delivery & Formulations

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