Caged and Dead Bacteria used Novel UTI Vaccine to Drive Immune Response

Bacterial infection is increasingly growing resistance against antibiotics, making the development of next-gen approaches essential to fight infections such as recurring urinary tract infections (UTI). Vaccines can treat such infections, however bacteria can be tricky targets. A team of scientists from the University of Texas, Dallas now developed a novel type of vaccine against UTI that uses dead bacteria in order to trigger the immune system to fight against these bacteria. According to the research published, the vaccine showed promise when it was tested in mice.

To develop an efficient vaccine against UTI, the scientists discovered a way to protect the bacterial cells, in order for them to linger longer. The team used a porous structure known as a metal organic frame (MOF), which showed efficiency in drug delivery, desalination, and carbon capture. The novel structure MOF traps and kills bacteria, then prevents the breaking down of cells in the body. When these MOFs containing dead bacteria are introduced to patient's body, their immune systems get triggered as it detects the MOFs as bacterial infection and starts producing antibodies against it, which helps to kill actual infection. The scientists tested this method in mice that were infected with a pathogenic strain of E. coli, which is commonly known to cause urine tract infections.

The team observed that the mice that received vaccination with MOF method coped much better compared to those that were given standard whole-cell vaccine. The team performed the test multiple times and observed the same promising result. However, it is still early to predict the guarantee of this method in human clinical trials. Yet, the team is focused on exploring these MOFs as treatment for UTIs in humans.