Silver lining for HIV patients: Researchers design experimental vaccine

New Delhi: One of the most deadliest diseases to have gripped the world is HIV/AIDS, which has caused the biggest, long-standing challenge for scientists – a vaccine to cure it.

The research on procuring an effective vaccine is underway and scientists have come quite close to a final result.

When infected with the HIV virus, humans cannot produce the required antibodies to kill it, which is why the HIV vaccine has been a challenge to develop.

However, giving HIV patients new hope, researchers have designed a novel experimental vaccine that spurs animals to produce antibodies against sugars that form a protective shield around human immunodeficiency virus (HIV) in the body.

The molecule could one day become part of a successful HIV vaccine, the researchers said.

"An obstacle to creating an effective HIV vaccine is the difficulty of getting the immune system to generate antibodies against the sugar shield of multiple HIV strains," said Lai-Xi Wang, professor at the University of Maryland.

"Our method addresses this problem by designing a vaccine component that mimics a protein-sugar part of this shield," Wang added, in the paper published in the journal Cell Chemical Biology.

The team designed a vaccine candidate using an HIV protein fragment linked to a sugar group.

The protein fragment comes from gp120 – a protein that covers HIV like a protective envelope, bolstering HIV's defenses.

When injected into rabbits, the vaccine candidate stimulated antibody responses against the sugar shield in four different HIV strains.

The rare HIV-infected individuals who can keep the virus at bay without medication typically have antibodies that attack gp120, the researchers noted.

"This result was significant because producing antibodies that directly target the defensive sugar shield is an important step in developing immunity against the target and therefore the first step in developing a truly effective vaccine.

Although, "We have not hit a home run yet, but the ability of the vaccine candidate to raise substantial antibodies against the sugar shield in only two months is encouraging," Wang added.