

## AIDS Vaccine

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### INTRODUCTION

Most vaccines against other diseases stimulate the assembly of antibodies that 'neutralize' viral infectivity, but within the case of HIV, neutralizing antibodies don't clear the infection. This is often because HIV reproduces so fast, and mutates so quickly, that antibodies produced against the virus quickly become ineffective against newer viruses. Many new viruses are produced every day and everyone is slightly different from previous generations of the virus. Antibodies against HIV are only likely to be effective if they will bind to regions of the virus that change little between viruses.

### IMPORTANCE OF VACCINE

Another issue is that HIV has several sub-types which are concentrated in several regions of the planet. For instance, sub-type B is common in North America and Europe, but sub-type C is common in southern and eastern Africa. Any vaccine must either be effective against all sub-types or different vaccines must be developed against various sub-types.

That is, they're designed to stop HIV from infecting the body. A therapeutic vaccine may be a different quite vaccine design, one that might be used after infection already has occurred. Most researchers think that a therapeutic HIV vaccine wouldn't be a cure - that's, it probably wouldn't rid the body of virus and cause stopping anti-retroviral therapy [1]. However, such a vaccine could boost the body's immune reaction to the virus, thus reducing the quantity of virus within the body, reducing the danger of great disease, and possibly reducing the dose of antiretroviral drugs needed. Several such therapeutic vaccines are undergoing clinical trials. In July 2014, results from the primary phase of a little 2014 study of the drug romidepsin together with a vaccine candidate were announced at the International AIDS Conference in Melbourne. HIV-infected individuals received the vaccine to determine the idea for a memory immune reaction. Then the themes received the drug, which was given with the goal of coaxing HIV out of hidden reservoirs within the body. Results of phase 1 of the trial were positive: the drug "kicked" HIV out of reservoirs and increased detectable quantities of HIV. Subsequent phase of the trial, which should demonstrate whether the vaccine is effective at

disabling HIV-infected cells, is predicted to be completed in 2015.

Despite these obstacles, researchers still attempt to find a vaccine. There are two main sorts of vaccines: prophylactic and therapeutic. Researchers are pursuing both for HIV. Most vaccines are prophylactic, which suggests they prevent an individual from getting a disease. Therapeutic vaccines, on the opposite hand, are wont to increase the body's immune reaction to fight disease that the person already has. Therapeutic vaccines also are considered treatments [2].

Therapeutic vaccines are being investigated for several conditions, such as: cancerous tumors hepatitis B, tuberculosis, malaria and the bacteria that cause gastric ulcers. An HIV vaccine would theoretically have two goals. First, it might be given to people that don't have HIV to stop contracting the virus. This is able to make it a prophylactic vaccine. But HIV is additionally an honest candidate for a therapeutic vaccine. Researchers hope a therapeutic HIV vaccine could reduce a person's viral load.

Vaccine research may be a long process that begins with basic laboratory research and merchandise development, including animal experiments, mostly performed in academic laboratories and by the pharmaceutical industry [3]. The next step is to check these products (candidate vaccines) on healthy human volunteers through sequential phases. Phase I clinical trial and II trials provide data on the security of the candidate vaccines and on their ability to induce immune responses specific to HIV. These trials are done among small numbers of volunteers (50-200 per trial). Depending of the results obtained, candidate vaccines can proceed to large-scale phase III clinical trial trials, to get definitive information about their efficacy in inducing protection against HIV infection or AIDS. For scientific reasons, phase III clinical trial trials are wiped out populations with a high incidence of HIV infection, involving thousands of volunteers.

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**Received date:** December 3, 2020; **Accepted date:** December 17, 2020; **Published date:** December 24, 2020

**Citation:** Ying Z (2020) AIDS Vaccine. *J Vaccines Vaccin*; S9: e003.

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