

**Title: Novel Biological therapy for HIV and AIDS****Principal Investigator: Prof. Zeev Trainin****Background:**

The international pandemic of Human Immunodeficiency Virus (HIV) infection and AIDS is continuously expanding. Despite increased funding, political commitment and progress in expanding access to HIV treatment, the AIDS epidemic continues to outpace the global response. No region of the world has been spared. The epidemic remains extremely dynamic, growing and changing character as the virus exploits new opportunities for transmission. During 2004 alone around five million adults and children became infected with HIV. By the end of the year, an estimated 39.4 million people worldwide were living with HIV/AIDS. More than three million deaths from AIDS occurred in 2004, despite the availability of HIV antiretroviral therapy which reduced the number of deaths in high income countries.

Combinations of HIV drugs called **Highly Active Anti-Retroviral Therapy (HAART)** work well to suppress HIV and keep it from damaging the immune system so badly that patients develop AIDS. But resistance develops eventually in many if not most patients. As a result, new drugs are constantly needed, and they must be different enough from the existing drugs to avoid cross-resistance.

**The new invention:**

Researchers at the Veterinary Institute within the Ministry of Agriculture and Rural Development in Israel identified a Biological extract for the treatment of AIDS. The active compound in the Biological extract has a sugar moiety of approx. 3-3.5 KDa. The compound fights HIV infection by two distinct, yet synergistic, mechanisms: (1) stimulation of T-cell immune response, and (2) inhibition of the penetration of the virus into its target cells, thereby reducing viral load.

*In-Vitro* studies revealed the following effects of the Biological extract:

- a) Stimulates proliferation of T Lymphocytes.
- b) Increases secretion of IL-2 and IL6.
- c) Increases the ratio of CD4/CD8 cells.
- d) Decreases CCR5 receptors on human Lymphocytes (CCR5 is one of the co-receptors on human blood cells through which the HIV penetrates to the target cells).

*In-Vivo* studies using AIDS like disease in animal models (mice and monkeys) showed a preventive and therapeutics effects, measured as a decrease of viral load (monkeys infected with SHIV) and survival rate (mice infected with RL-MuLV virus).

**Applications:**

Treatment of HIV infection and AIDS

**Patent Status:**

PCT filed June 2005

