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## **How Can Enzymes Assist in Fighting the AIDS Virus**

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AIDS is a disease of the immune system, an autoimmune deficiency syndrome (AIDS). Therefore, anything which can build up the body and the immune system would be beneficial. One group of enzymes breaks down food particles for muscle and liver storage. Other enzymes are used to build skin, bone, muscles, or glandular tissue, as well as nerve cells.

Enzymes are important in detoxifying the body. Some enzymes eliminate toxins from the skin, the kidneys, lungs, and colon. One enzyme aids in the formation of urea which is passed in the urine.

Others work to release carbon dioxide from the lungs, lyse (chew up) fibrin (scar tissue) in the tissue and break up small clots in the blood stream. Some enzymes lower cholesterol (in the blood stream).

One group of enzymes -- hydrolytic enzymes -- specifically function to combat chronic disorders.

Also, these enzymes stimulate the immune system and break up circulating immune complexes which increase in number as the CD4 lymphocytes decrease and the AIDS virus worsens.

Researchers in Germany are presently verifying the use of certain hydrolytic enzyme mixtures\* as an effective therapy in controlling and combating the vicious AIDS virus.

### **Hydrolytic Enzymes in HIV Therapy**

The deleterious effects of the circulating immune complex (CIC) in the pathogenesis of AIDS is an important issue in the effective treatment of this deadly virus. Increased levels of CIC have been demonstrated in several investigations of asymptomatic HIV-infected patients with lymphadenopathy syndrome, AIDS-related complex (ARC) and AIDS. A correlation of the immune complex (IC) levels and the progress of HIV infection has been demonstrated by several authors. CIC in HIV infection is formed by the binding of retroviral antigens to corresponding antibodies, mostly of the IgG and IgA classes.

Persistently elevated levels of CIC may lead to their binding to different circulating and tissue cells, e.g., to CD4-T cells, which, in turn, is followed by complement activation.

The destruction of CD4-T cells contributes to immune deficiency. The elimination of IC has been associated with an improvement in several IC-mediated diseases. One method of fighting IC-related diseases (e.g., rheumatoid arthritis, multiple sclerosis) is to reduce the IC levels by treatment with hydrolytic enzymes. These enzymes mobilize cell-bound IC and induce its clearance by stimulation of the macrophages. Furthermore, hydrolytic enzymes split the Fc part of the cell-bound IC, thereby preventing activation of the complement system and cell destruction.

Dr. Stauder and his associates of the Medizinische Enzymforschungsgesellschaft (Germany) investigated the use of hydrolytic enzymes as adjuvant therapy in AIDS/ARC/LAS patients showing high levels of circulating immune complexes (CIC). Other diseases, revealing high CIC-levels as well, may be improved or even cured by eliminating CIC. The results obtained from experiences of CIC-elimination by hydrolytic enzymes are presented below. As may be determined from the data available, hydrolytic enzymes should be included in the therapy of HIV positive patients. Clinical trials are being continued.

HIV positive patients show elevated CIC levels, the concentration of which is correlated to the stage of disease. Therefore, according to the manifestation of AIDS, certain risk groups display specific CIC levels, finally decreasing in consequence of the damaged immune system.

Experimental studies proved that certain hydrolytic enzyme mixtures eliminate IC by improving the clinical state of patients with IC-associated disease; an example drawn from a trial conducted on patients with rheumatoid arthritis.

Hydrolytic enzymes decouple tissue-bound IC, splitting them by mobilization and depolymerization. Smaller particles are eliminated by the reticuloendothelial system (RES) which is activated simultaneously with macrophages and natural killer (NK) cells. Macrophages and NK cells may be activated either directly by enzymatic induction or indirectly by the removal of blocking CIC.

To summarize, it can be stated that hydrolytic enzymes may possibly reduce immune deficiency and support the endogenous immune defense (macrophages, NK cells) by mobilizing and eliminating tissue-bound as well as circulating HIV-induced immune complexes.

- Certain hydrolytic enzyme mixtures include pancreatin, trypsin, chymotrypsin, bromelain, papain, amylase, and lypase with rutin.

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