The Innovative Use of Proteolytic Enzymes as Specific Targeting Antivirals

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Currently, medical technology in the treatment of viruses is lacking. Current antivirals are ineffective and often try to work in complex manors inside the cell to protect of remove viral DNA from the cells. The project proposes a new theory for curring viruses in a simple and more effective manor. This method uses a proteolytic enzyme to cut off the protein receptors on a virus. The method is applicable to all viruses, since all viruses are built of proteins and must attach to the host cell, a specific protease can be determine to cleave a viral protein on the viruses' receptors. To prove the concept, the T4 Bacteriophage Escherichia Coli was used as a target virus. The protein selected was gene product 9, considered to be a trigger for tail contraction and center for infection, and the corresponding natural enzyme, Proteinase K, was selected. The gene product 9 protein was purified and tested in a digestion assay with Proteinase K. A gel with samples over time showed that the gene product 9 was cleaved. The large fragment at around 23kDa puts the cut in gene product 9's flexible loop 1, which leaves a fragment roughly 21-26kDa in size. The flexible loop is a nice expose region that was cut. The protein was cut, therefore the long tail fiber would no longer be attached to the end and would no longer be attached to the virus. This means that the receptors would not be attached to the virus, therefore the virus is rendered unable to infect other cells, successfully inhibiting the cycle of infection.

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