HIV And Hope

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Abstract- *In this paper we are trying to envisage the limitations of ART and focus on new drugs which will cure the HIV. By the use of gene therapy, if undergoing trials will success, then it will be great breakthrough of 21st century in the field of HIV. Mean time some advance ART drugs based on TIBO derivative which shown a good result as compare to other available drugs.*

Keywords- HIV (Human Immunodeficiency, ART(Anti retroviral therapy, TIBO (4,5,6,7tetrahydro imidazo benzodiazepine-(1,4) thion., NNRTI (Non-Nucleoside Reverse Transcriptase Inhibitor), NRTI(nucleoside reverse transcriptase inhibitor

I. INTRODUCTION

HIV is a virus which spread through contact with the bodily fluids (viz through sex, injection,) of a person infected with HIV.HIV attacks the human body system CD4 cells" a type of white blood cell" that plays a major role in protecting the body from infection.HIV binds onto the CD4 cell and uses it to reproduced and spread throughout the body .once the virus weeken the person immune system by destroying CD4 cells, that person is no longer able to fight off infections.

II. DRUG AND ITS CHALLENGES

The current treatment protocol for HIV is for patient to take several medications from at least two different classes known as antiretroviral therapy(ART),daily for life's ART can not cure HIV but its effective at preventing the virus from multiplying however ,portions of the virus hide in reservoirs throughout the body as fallow;

(i) Cellular reservoirs-dormant memory T cell (in lymph nodes and blood) ,macrophages and diacritic cell in various tissues (specially in lymph, nodes ,gut and central nervous system)
(ii) Anatomic reservoirs-CNS, gastrointestinal tract, genital tract.

In these reservoirs, the virus lay dormant and the immune system is unable to detect the latent virus .if a patient stops ART, the dormant virus become active and the HIV infection start again although ART is an effective treatment, in long term ART has side effect, including lipodystrophy, hyperlipidemia and osthophoresis .Additionally treatment is expensive for one month treatment its cost around 60,000 Rs per month.

The two classes of HIV drugs based on the intervention to the HIV life cycle are NRTIS ;it block reverse transcriptase, an enzyme HIV need to make copies of itself abacavir, didanosine , emtricitabine, lamivudine, stavudine, tenofovir, disoproxil fumarate and zidovudine. NNRTIS; NNRTIs bind to and later alter reverse transcriptase, an enzyme HIV need to make copies of itself. Drugs name are delavirdine, Efarinenz, etravirine, nevirapine and rilpivirine in this series, TIBO derivatives are also used in the drug synthesis in the class of NNRTIS which shown below.

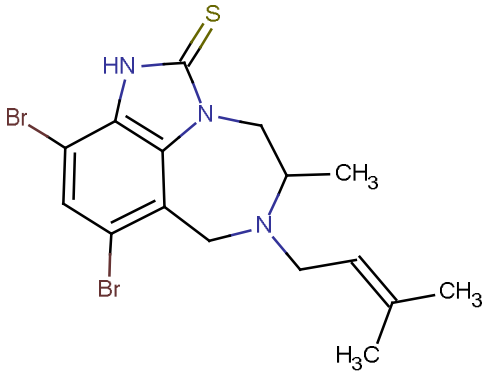

Table: Physico-chemical property

Binding energy	Ki	ClogP	2D polar surface area	H-bond Donar	H-bond acceptor
-7.57	2.42 um	4.52	18.71	1	1

Have comparably less side effect. However it's not a final solution .In India Maximum R & D are emphasizing to minimize the side effect of ART. For permanent cure, we should change the strategy and government must double the budget for R&D activity of HIV/AIDS to work on; eliminating the viral reservoir and GENE therapy. GENE therapy aims to modify patients CD4 cells rendering them resistant to HIV.GENE therapy offers a functional cure, which does not directly eliminate the virus, but it primes a patient body to be able to control and kill the infection without the use of ART.

Reservoir eliminating drugs are used in method known as 'KICK and KILL". These drugs activate latent HIV from its hiding places throughout the body so that ART and person's immune system can attack and kill the remaining virus.

These are currently several studies and trials are going on both the strategies. Hope we will have HIV free environment like.

III. CONCLUSION

To eliminate the future risk after stopping of the ART dose, there is need to discover new advance ART drugs which will have very less latency, less side effect and cost effective. TIBO based drugs are supposed to fulfill the aforesaid requirement for time being but it's not a final derivative which will prove as Bhramashatra for the HIV.

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