

Identification of Probable New Anti-HIV Drugs

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Abstract

HIV infections are difficult to treat disease till date. Not many drugs are there for treating it. In this work effort has been made to identify probable drugs with anti-HIV effects using a technique developed and presented in previous work.

Keyword: HIV infections, treat disease, drugs, anti-HIV effects, technique developed.

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INTRODUCTION

Human immunodeficiency viruses 1 & 2, is one of the important causes of death and misery in this world. Drugs have been developed for containing HIV viruses within the body, but they are fewer in number. In this work, effort has been made to list the names of all the drug compounds/chemicals, which could be probable candidates with anti-HIV effects within the human body.

Aim

To identify the constituents of new probable anti-HIV drugs from the molecular weights of immune targets of Human Immunodeficiency virus.

METHODS

Formula Used

Immunological targets and their molecular weights are identified. Then using the formula $\text{Log A}/\text{Log B} = R$ (Ratio) = $64.5/\text{C-H-N-O}^1$. Log A is Logarithmic value of molecular weight (elemental atomic weight multiplied by number of molecules of that element) of individual(s) of drug. Log B is Logarithmic value of molecular of similar element(s) of the Deoxy Ribose Nucleic Acid (DNA). C-H-N-O is basic effector (immune target). 64.5 kda is the molecular weight of a complex effector molecule i.e., Haemoglobin- a carrier of Carbon, Hydrogen, Nitrogen, Oxygen in Phosphorus in different forms.

DNA Formula and Their Logarithmic Values

S. No	Chemical Formula of DNA	Log Value of MOL. WT of Carbon in DNA	Log Value of MOL. WT of Hydrogen in DNA	Log Value of MOL. WT of Nitrogen in DNA	Log Value of MOL. WT of Oxygen in DNA	Log Value of MOL. WT of Phosphorus in DNA
1	$\text{C}_{15}\text{H}_{31}\text{N}_3\text{O}_{13}\text{P}_2$	2.255	1.491	1.6232	2.31806	0.301

For example, to obtain the number of Carbon Atoms of probable drug that act on the immune trigger (immune trigger "x") $M = (64.5 \times 2.255)/\text{Mol Wt of "x"}$ in kda.

Antilog₁₀ of M (press Shift-->press Log)/Molecular wt of Carbon (12) = Expected number of Carbon atoms in probable drug with anti HIV effect to

lock on to the given immune trigger(s) and block its effects. Similarly expected number of atoms of Hydrogen, Nitrogen, Oxygen and Phosphorus in a probable anti-HIV drug can be calculated for any given immune trigger. A search for drugs with similar number of Carbon, Hydrogen, Nitrogen, Oxygen and Phosphorus atoms can lead to probable drugs, Monoclonal Antibodies(mAb's) or compounds with anti-HIV effects.

S. No	Immune target	Molecular weight in KiloDalton	Number of Molecules of Carbon(C), Hydrogen(H), Nitrogen(N), Oxygen(O) and Phosphorous(P) in probable anti-HIV drugs
1	GP 160	160	C, H ₄ , O
2	P 24	24	C ₉₅ H ₇₄ N ₉ , H ₇₄ N ₉ , N ₁₆ H ₄₅ , O ₁₀ H ₆ O ₈
3	P 7	7	P ₂₀
4	P 6	6	P ₅₇
5	Gp 120	120	C, H ₆ , N, O
6	Gp 41	41	C ₂₉ H ₁₈ N ₂ , H ₁₈ N ₂ , O ₂ H ₇
7	Protease (PR)	11	P ₂
8	RT(P66/P51)	66 or 51	P66- C ₁₃ , H ₂₆ , N ₃ , O ₁₂ P51- C ₅₉ , H ₆₆ , N ₄ , O ₅₃
9	Integrase	32	C ₂₉ H ₂₅ , H ₈ N ₃ , H ₈ O ₃ , N ₁₃ H ₄ , O ₂ H ₉
10	Rev	13 or 19	Rev13- P Rev19- H ₇₇ N ₅₀ , H ₇₇ N ₅₀ , N ₂₃ H ₃₂
11	Nef	27 or 30	Nef27- C ₂₀ H ₃₁ , H ₂₇ N ₉ , H ₂₇ N ₉ , O ₂ H ₅₅ Nef30- C ₅₈ H ₇₆ , H ₁₂ N ₄ , H ₁₂ N ₄ , O ₆ H ₂₂
12	Vif	23	C ₁₇ H ₅₆ , H ₁₀ N ₉ , H ₁₀ N ₉ , O ₁₉ H ₉
13	Vpr	14 or 15	Vpr14-P Vpr15-P
14	Vpu	9 or 16	Vpu9-P ₅ Vpu16-P
15	Vpx	12 or 16	Vpx12-P Vpx16-P

REVIEW OF LITERATURE

The relationship between given molecular weight of immune trigger and constituents of suitable drug(s) to neutralize that immune trigger has already been established in a previously conducted work¹. In this work, efforts have been made to identify constituents of

probable anti-HIV drugs, that can neutralize HIV immune triggers, of any molecular weight(s) (in Kilodaltons).

Observation

Some of the combinations and matching drugs:

For Carbon

S. No	Atoms of Carbon	Probable drugs with anti-HIV effects
1	C ₁₃	Melatonin, Ranitidine
2	C ₅₉	Co-enzyme Q10, Leuprolide

For Hydrogen

S. No	Atoms of Hydrogen	Probable drugs with anti-HIV effects
1	H ₂₆	Pitolisant, AM-1220, Carvedilol, Diltiazem
2	H ₆₆	Oxytocin, Passiontide, Do triacontanol, Ilexoside XLVI

For Nitrogen

S. No	Atoms of Nitrogen	Probable drugs with anti-HIV effects
1	N	Efavirenz (Proved), Nystatin, Indomethacin
2	N ₃	Dolutegravir (Proved), Bictegravir (Proved), 1,2,3 Triazoles, Celecoxib, Lamivudine (Proved)
3	N ₄	Lopinavir (Proved), Donafenib, Theophylline

For Oxygen

S. No	Atoms of Oxygen	Probable drugs with anti-HIV effects
1	O	Abacavir (Proved), Everolimus, Etravirine (Proved)
2	O ₁₂	Is quercetin, Aluminium sulphate/Aluminium Magnesium Silicate

For Phosphorus

S. No	Atoms of Carbon	Probable drugs with anti-HIV effects
1	P	Tenofovir (Proved), Sofosbuvir, Eosinophil, Brigati nib

DISCUSSION

In above mentioned tables, it is observed that compounds bearing those numbers of atoms of Carbon, Hydrogen, Nitrogen, Oxygen and Phosphorus individually or in different combinations may show anti-HIV effect. But, drugs with combinations of matching number of more than one elemental atom i.e., C+/-H+/-N+/-O+/-P will be having greater anti-HIV effect compared to drugs with matching number of any single elemental atoms of Carbon /Hydrogen / Nitrogen / Oxygen / Phosphorus.

CONCLUSION

Above mentioned method of identifying drugs with potential anti-HIV effect will be helpful in repurposing existing drugs used for other conditions as well as, create new drugs. This technique can also be used for identifying probable drugs for Rabies, Tuberculosis, Cancer... etc. If immune target is identified; it can be locked onto and blocked, thereby ensuring a disease-free state in the host (humans).

BIBLIOGRAPHY

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