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Phytomolecules as anti HIV-1 tools

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The current antiretroviral chemotherapeutics including anti HIV-1 RT drugs (nucleoside, nucleotide and non-nucleotide reverse transcriptase inhibitors) and antiproteases including those used in combinatorial therapy such as highly active antiretroviral; (HAART) has caused significant reduction in the rate of mortality of HIV-1 infected individuals. It has allowed sufficient rise in CD4+ve lymphocyte counts into the HIV-1 infected individuals and imparted relatively longer and healthier lives. Recent reports, however, have indicated that application of plant based principles may prove to be highly useful, affordable and efficient in order to arrest the HIV-1 progression. It may be accelerative in transition from development to usage. Also, the toxicity issues may be easily managed while treating AIDS patients with herbal preparations as these plant-ingredients are suitably metabolized and excreted out of body without much accumulation in human organs. Certain plant extracts such as green tea containing ((-)-Epigallocatechin-3-gallate (EGCG)), Brazil nut and Caocao containing immunopotentiators, grapes and red wine containing plenty of antioxidants which mimic oxidative stress induced by intake of antiHIV-1 regimen, *Punica granatum* (pomegranate) and several others have been recently shown to possess properties of intervention in HIV-1 proliferation. The aqueous and ethanolic extracts of *Phyllanthus amarus* exhibits potential to inhibit the replication of even anti HIV-1 drug resistant variants in different ways viz., by blocking the interaction of gp120 with its primary cellular receptor CD4 as well as inhibition of activities of HIV-1 integrase, reverse transcriptase and protease enzymes. The ethanol extract of *Nelumbo nucifera* Gaertn. (Kamal) as well as Pine Cone extract from *Pinus yunnanensis* have been shown to contain some molecules which in isolation or in combination display strong antiHIV-1 activity. This review presents a current account of reports available on phytochemicals isolated from various parts of different plant species which exhibit strong capability to block HIV-1 activity. These molecules possess immense possibility to be developed as potential anti HIV-1 chemotherapeutics in future.

Keywords: Phytochemicals, Humanimmunodeficiency type 1 reverse transcriptase (HIV-1RT), Highly active antiretroviral therapy (HAART), CD4+ve lymphocyte, Toxicity, Anti HIV-1 drugs resistance, Chemotherapeutics.

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