

**Review Article**

**A SHORT REVIEW ON HERBAL PRODUCTS ACTING AS ANTI-HIV AGENTS**

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**ABSTRACT**

Over the previous decade, considerable advancement has been made in research on the regular items having hostility to HIV movement. An assortment of optional metabolites got from natural origin demonstrated mild to strong anti-HIV properties. Nature has consistently given a wellspring of medications to different sicknesses. Various therapeutic plants have been accounted for to have against HIV. The investigation of regular items in biomedical exploration is not an advanced idea. vast numbers of the best medicinal therapeutic drugs are extracted from natural products and concentrated in HIV/AIDS. The Biomedical review has a long history of disclosure depending on the screen of medicinal spices and conventional medicines. It is essential to remember the clinical study convention to conclude Therapies based on these herbal products combat the negative view of alternative medicine as therapeutic remedies. This review addressed different herbal products that are having anti-HIV properties.

**Keywords:** HIV, Natural products

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**INTRODUCTION**

The human immunodeficiency infection (HIV) is assembled to the class Lentivirus inside the group of Retroviridae, subfamily Orthoretrovirinae [1]. HIV is categorized into types 1 and 2 based on genetic characteristics and contrasts in the viral antigens (HIV-1, HIV-2). The immunodeficiency infections of non-human primates are additionally gathered to the class Lentivirus. Epidemiological and phylogenetic studies currently available indicate that HIV was spread to the human population between 1920 and 1940. HIV-1 developed from infections of non-human primate immunodeficiency caused by Central African chimpanzees and HIV-2 from filthy West African mangabeys [2, 3]. Infections can be an etiological operator in infective sickness in individual and different creatures, are actually an assorted gathering of infective specialists which varies extensively fit as a fiddle, size, compound structure, impacts on hosts and host range. Helps is an infection for the human safe framework spread out through HIV [4]. HIV is essentially communicated through hypodermic needles, unprotected sex, debased blood bondings, from mother to kid during pregnancy. HIV doesn't communicate through salivation and tears. Helps can't be restored, anyway, antiretroviral treatment could slow the course of illness, and cause too close to the ordinary future. Antiretroviral treatment diminishes the likely danger of passings, which medications can be pricey and produce serious results. Without antiretroviral treatment, a normal endurance time span after the disease is determined around 9 to 11 y, concerning the sort of HIV [5]. HIV is ordered into two kinds like HIV 1, and HIV 2. Each started from nonhuman primates in West-focal Africa during the twentieth century. HIV 1 is starting from Chimpanzees and HIV 2 is beginning from Old World Monkey [6]. Helps was at first distinguished by the U. S Centres for Disease Control and Prevention (CDC) in 1981, and it is causing the HIV contamination had been recognized during the early piece of the decade. At the hour of 2012, AIDS has prompts an expected 36 million passings around the globe, and around 35.3 million people live with HIV everywhere on the world [7]. Assortments of synthetic substances were surveyed for inhibitory impacts upon HIV replication *in vitro*. HIV has two primary focuses *in vivo* like tissue macrophages and CD4 lymphocytes. The medicines focused at the control of HIV replication in both cell types. The replicative pattern of HIV comprises of ten stages that may be viewed as alluring focuses for the medicines of HIV. Various exploration research centres are associated with the improvement

of antiviral operators which influence with HIV in various phases of viral replication. In view of the stage from which they interact with the HIV replication cycle, a significant number of the counter HIV substances are allocated to one of these ten groups of HIV inhibitors, analogous to mix, adsorption, uncoating, DNA replication, incorporation, turn around record, interpretation, record, development, and get together or discharge [8]. The following text categorizes new natural products with anti-HIV action according to their chemical structures: terpenes, phenolics, alkaloids, peptides and carbohydrates, together with IC50 values [9].

**Retrovirus replication:** The mechanism of retrovirus replication [10] (fig. 1).

**Treatment for HIV**

**Natural products:** Nature has an extensive range of medicine to fight against many diseases which are to be safe. The natural products used for the treatment of HIV are given in below.

**Anti-retroviral therapy**

During the 1970s, one advantage of finding out how retroviruses replicate the detection of potential focus for antiviral therapies was not frequently addressed, when a large portion of the study was completed, the identified retroviral viruses were confined to a few animal forms of creatures. The disclosure of the lethal human retrovirus HIV, however, changed all of that in the mid-1980s. Everyone who studied the rise in creature retroviruses quickly realized that retroviral replication cycle experiments may distinguish drug targets that could be beneficial in treating HIV-contaminated individuals and experiencing AIDS. Maximum anti-HIV drugs now in extensive use hinder reverse transcriptase and some obstruct the viral protease from another retroviral enzyme (To produce the final components of virus particles, this breaks viral proteins) [53]. As of late, In the treatment of HIV infection, a blockage of viral integrase was also reported, one more vindication of endeavours to seek after the occasionally elusive procedures for infection replication [54]. As so numerous major advancements in research, the revelation of opposite transcriptase in 1970 stamped not merely the intersection of an end target. Likewise, the beginning stage for inspecting different parts of the augmentation pattern of retroviruses, the combination of viral DNA and dissemination of endogenous provirus starting points of viral oncogenes and the revelation of proto-oncogenes.

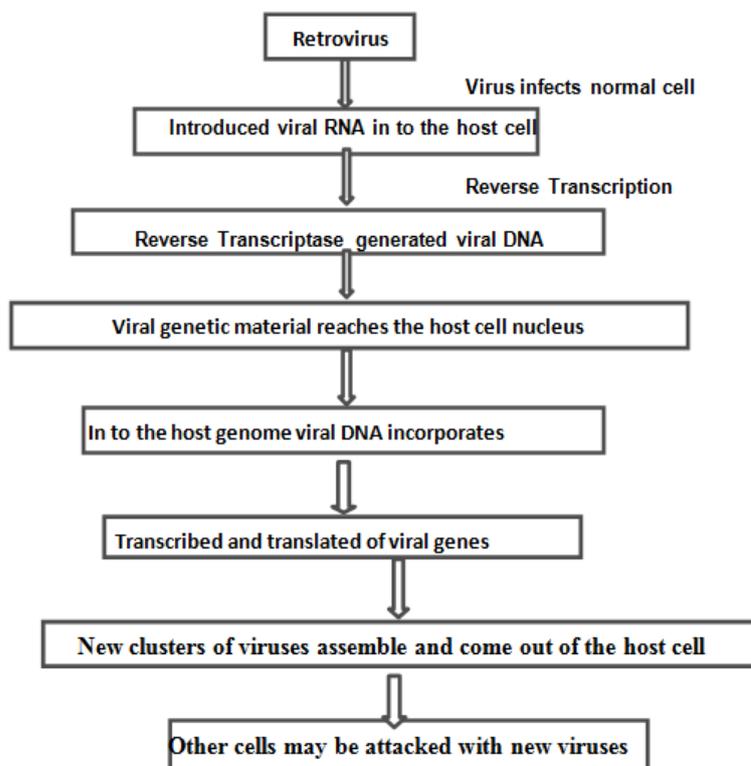


Fig. 1: The mechanism of retrovirus replication

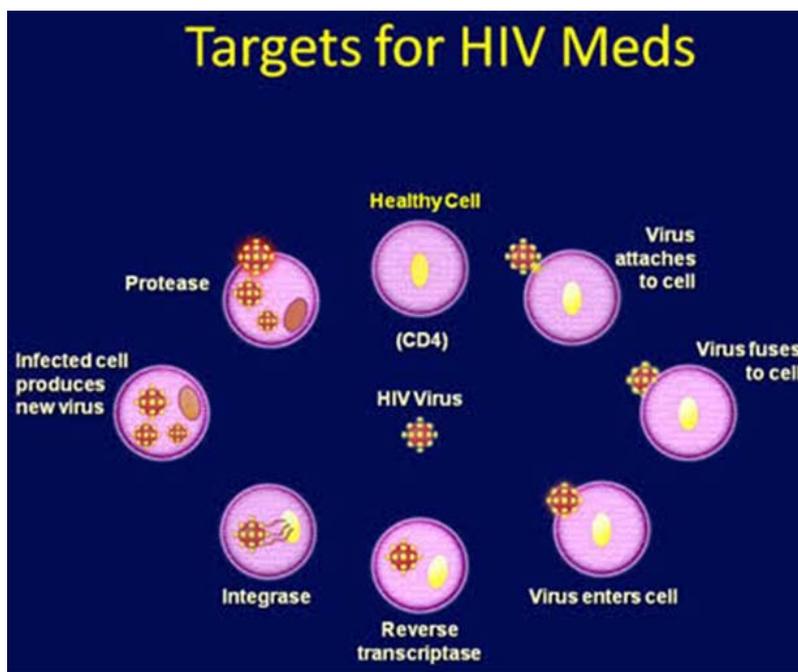
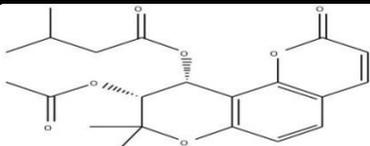
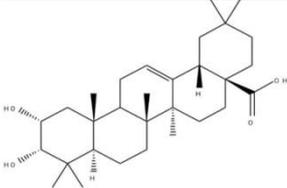
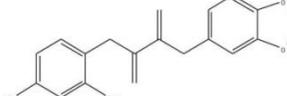
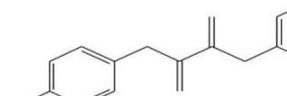
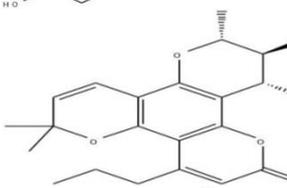
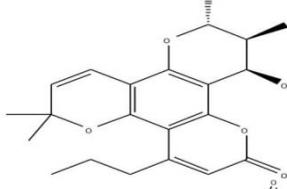
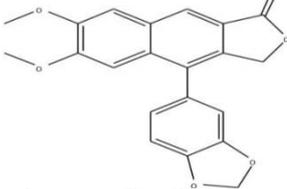
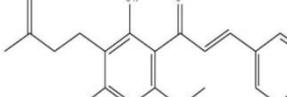
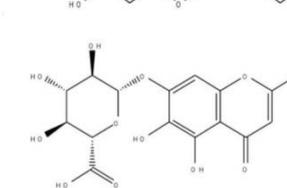
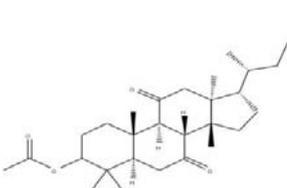
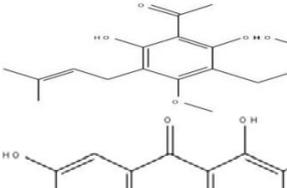
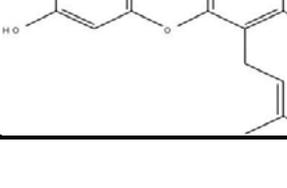
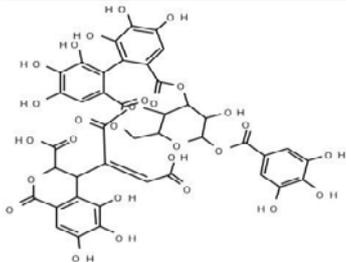
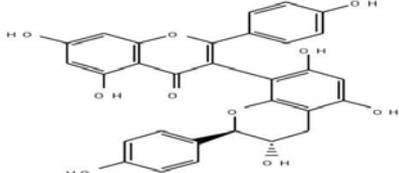
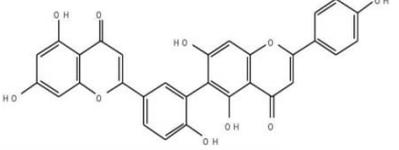
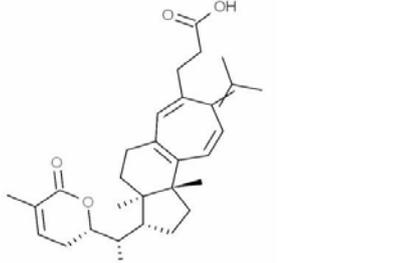
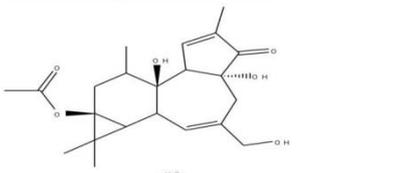
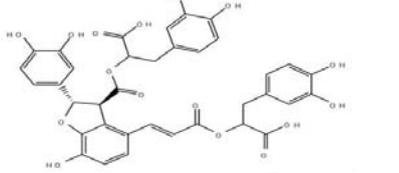
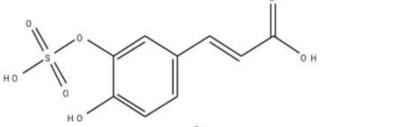
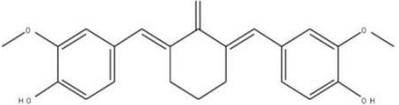
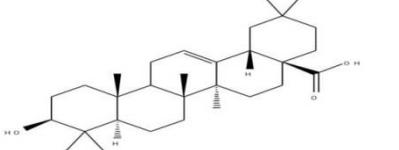
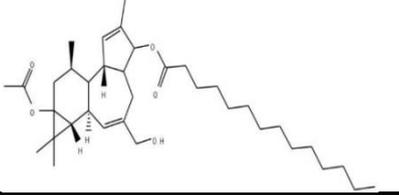


Fig. 2: Life cycle of virus

Table 1: Anti-retroviral therapy

S. No.	Active constituent name	Chemical structure	Source	IC50
1	Suksdorfin [11]		Common name-Angelica scientific name-Angelicamorii family-Apiaceae	IC50 value-2.6 μM [12]

2	Maslinic acid [13]		Common name-Asian herb bennet scientific name- Geum japonicum family- <i>Rosaceae</i>	IC50 value-17.9 $\mu$ M [14]
3	Anolignan-A [15]		Common name-Axle wood. scientific name-Anogeissus acuminata family- <i>Combretaceae</i>	IC50 value-60.4 $\mu$ g/ml [16]
4	Anolignan-B [15]		common name-Axle wood scientific name- Anogeissusacuminata family- <i>Combretaceae</i>	IC50 value =1,072 $\mu$ g/ml [17]
5	Calanolide-A [18]		Common name-Calophyllum scientific name- Calophyllucardato- oblongum family- <i>Calophyllaceae</i>	IC50 value-20 $\mu$ M [19]
6	Calanolide-B [18]		Common name-Calophyllum scientific name- Calophyllucardato- oblongum family- <i>Calophyllaceae</i>	IC50 value-15 $\mu$ M [20]
7	Retrojusticidin-B [21]		Common name-Ceylon myrtle scientific name- Phyllanthumyrtifolius family- <i>Euphorbiaceae</i>	IC50 value-5.49 $\mu$ M [22]
8	Xanthohumol [23]		Common name-Common hop scientific name- Humulus lupulus family- <i>Cannabaceae</i>	IC50 value-0.50 $\mu$ g/ml [24]
9	Baicalin [25]		Common name-Chinese skullcap scientific name- Scutellaribicalensis family- <i>Lamiaceae</i>	IC50 value-5.7 $\mu$ M [26]
10	Lanostanetrirer pene [27]		Common name-Corky debar tree scientific name- Polyalthiasuberosa family- <i>Annonaceae</i>	IC50 value-4.1 $\mu$ M [28]
11	Mallotojaponin [29]		Common name-Food wrappeplant scientific name-Mallotus japonicas family- <i>Euphorbiaceae</i>	IC50 value-26.9 $\mu$ M [30]
12	Macluraxantho ne-B [31]		Common name-Fustic tree scientific name-Maclura tinctoria family- <i>Moraceae</i>	IC50 value-13.3 $\mu$ M [32]

13	Repandusinic acid [33]		Common name-Gale of the wind scientific name- <i>Phyllanthus nirari</i> family- <i>Phyllanthaceae</i>	IC50 value-12.5 $\mu$ M [34]
14	Wikstroli-B [35]		Common name-Indian string bush scientific name- <i>Wikstroemia indica</i> family- <i>Thymelaeaceae</i>	IC50-184 $\pm$ 6 $\mu$ M[36]
15	Robustaflavone [37]		Common name-Japanese wax tree scientific name- <i>Rhus succedanea</i> family- <i>Anacardiaceae</i>	IC50 value-65 $\mu$ M[38]
16	Lancilactone-C [39]		Common name-Kadsura scientific name- <i>Kadsulancilimba</i> family- <i>Schisandraceae</i>	IC50 value->100 $\mu$ g/ml[40]
17	Prostratin [41]		Common name-Mamala tree scientific name- <i>Homalanthus nutans</i> family- <i>Euphorbiaceae</i>	IC50 value-0.5 $\mu$ M [42]
18	Lithospermic acid [43]		Common name-Red sage/Danshen scientific name- <i>Salvia miltiorrhiza</i> family- <i>Lamiaceae</i>	7.91 $\pm$ 1.59 $\mu$ mol·L-1. [44]
19	Caffeic acid [45]		Common name-Ratanjot scientific name- <i>Arnebia euchroma</i> family- <i>Boraginaceae</i>	IC50 value-18.9 $\pm$ 10.1 $\mu$ M [46]
20	Curcuminoids [47]		Common name-Turmeric scientific name- <i>Curcuma longa</i> family- <i>Zingiberaceae</i>	IC50 value-100 $\mu$ M [48]
21	Oleanolic acid [49]		Common name-Yellowhorn scientific name- <i>Xanthoxeris orbifolia</i> family- <i>Sapindaceae</i>	IC50 value-21.8 $\mu$ M [50]
22	12-o-tetradecanoylphorbol-13-acetate [51]		Common name-Purging croton Scientific name- <i>Croton tiglium</i> Family- <i>Euphorbiaceae</i>	IC50 value-0.48 mg/ml [52]

### Curcuma longa for treatment of COVID-19

Curcumin is a polyphenolic compound isolated from establishments of rhizome plant *curcuma longa* (family Zingiberaceae), shows a wide extent of remedial belongings including disease counteraction specialist, unfriendly to microbial, against proliferative, alleviating, neuroprotective and cardioprotective properties [55]. Curcumin applies antiviral activities against the wide scope of contaminations including HIV, HSV-2, HPV diseases, Influenza, Hepatitis, Zika virus Adenovirus contamination. Continuous experiments have shown that a related new SARS-CoV, SARS-COV2, also targets human host cells by zeroing on the film receptor Angiotensin-Converting Enzyme 2 (ACE2), the entry site for COVID-19 [56].

### CONCLUSION

Despite the fact that HIV-1 has been the most examined irresistible specialist over the most recent 30 y, the new accessible advances have permitted the picking up of new data about infection structure and replication. Natural products, especially those in traditional medication have provided a premise of new medication possibility for some illnesses, HIV and, other neurocognitive issues.

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### AUTHORS CONTRIBUTIONS

All the authors have contributed equally.

### CONFLICT OF INTERESTS

Declared none

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