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 Bithy West African mangabeys [2, 3]. Infections can be an etiological operator in infections of nonhuman primate immunodeficiency spread to the human population between 1920 and 1940. HIV-1 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 down to the core 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 Chimpzees 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 anywhere 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 blockade 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 provirusarting points of viral oncogenes and the revelation of proto-oncogenes.
Fig. 1: The mechanism of retrovirus replication

![Diagram of retrovirus replication]

Fig. 2: Life cycle of virus

![Diagram of HIV life cycle]

Table 1: Anti-retroviral therapy

| S. No. | Active constituent name | Chemical structure | Source | IC50 |
|--------|-------------------------|--------------------|--------|------|
| 1      | Suksdorfin [11]         | ![Chemical structure](image) | Common name–Angelica scientific name- Angelicamorii family–Apiaceae | IC50 value-2.6 μM [12] |
| No. | Name                  | Common name          | Scientific name                      | Family          | IC50 value     |
|-----|-----------------------|----------------------|--------------------------------------|-----------------|----------------|
| 2   | Maslinic acid [13]    | Asian herb bennet    | Geum japonicum                       | Rosaceae        | 17.9 μM [14]   |
| 3   | Anolignan-A [15]      | Axle wood            | Anogeissus acuminate                 | Combretaceae    | 60.4 μg/ml [16]| 1.072 μg/ml [17] |
| 4   | Anolignan-B [15]      | Axle wood            | Anogeissus acuminate                 | Combretaceae    | 20 μM [19]     |
| 5   | Calanolide-A [18]     | Calophyllum          | Calophyllum cardato-oblongum         | Calophyllaceae  | 15 μM [20]     |
| 6   | Calanolide-B [18]     | Calophyllum          | Calophyllum cardato-oblongum         | Calophyllaceae  | 5.49 μM [22]   |
| 7   | Retrojusticidin-B [21]| Ceylon myrtle        | Phyllanthus myrtifolius              | Euphorbiaceae   | 50.0 μg/ml [24]| 4.1 μM [28]     |
| 8   | Xanthohumol [23]      | Common hop           | Humulus lupulus                      | Cannabaceae     |                |
| 9   | Baicalin [25]         | Chinese skullcap     | Scrutella ribicolaensis              | Lamiaceae       |                |
| 10  | Lanostanetriter pene   | Corky debar tree     | Polyalthia suberosa                  | Annonaceae      | 13.3 μM [32]   |
| 11  | Mallotojaponin [29]   | Food wrappeplant     | Mallotus japonicas                  | Euphorbiaceae   | 26.9 μM [30]   |
| 12  | Macluroxantho ne-B [31]| Fustic tree          | Maclura tinctoria                    | Moraceae        |                |
| No. | Compound               | Common Name                                | Scientific Name                     | Family              | IC50 Value |
|-----|------------------------|--------------------------------------------|-------------------------------------|---------------------|------------|
| 13  | Repandusinic acid [33] | Gale of the wind                           | Phyllanthus nirari                  | Phyllanthaceae      | 12.5 µM    |
|     |                        |                                            |                                     |                     |            |
| 14  | Wikstro B [35]         | Indian string bush                         | Wikstroemia indica                 | Thymelaeaceae       | 184 ± 6 µM |
|     |                        |                                            |                                     |                     |            |
| 15  | Robustaflavone [37]    | Japanese wax tree                          | Rhus succedanea                     | Anacardiaceae       | 65 µM      |
|     |                        |                                            |                                     |                     |            |
| 16  | Lancilactone-C [39]    | Kadsura                                   | Kadsulancilimba                     | Schisandraceae      | >100 µg/ml |
|     |                        |                                            |                                     |                     |            |
| 17  | Prostratin [41]        | Mamala tree                                | Homalanthus nutans                 | Euphorbiaceae       | 0.5 µM     |
|     |                        |                                            |                                     |                     |            |
| 18  | Lithospermic acid [43] | Red sage/Danshen                           | Salviamiltiorrhiza                 | Lamiaceae           | 7.91±1.59 µmol·L⁻¹ |
|     |                        |                                            |                                     |                     |            |
| 19  | Caffeic acid [45]      | Ratanjot                                   | Arnebiaeuchroma                    | Boraginaceae        | 18.9±10.1 µM |
|     |                        |                                            |                                     |                     |            |
| 20  | Curcuminoids [47]      | Turmeric                                   | Curcuma longa                      | Zingibaraceae       | 100 µM     |
|     |                        |                                            |                                     |                     |            |
| 21  | Oleanolic acid [49]    | Yellowwhorn                                | Xanthocerus sorbifolia             | Sapindaceae         | 21.8 µM    |
|     |                        |                                            |                                     |                     |            |
| 22  | 12-o-tetradecanoylphorbol-13-acetate [51] | Purging croton                           | Croton tiglium                     | Euphorbiaceae       | 0.48 mg/ml |
|     |                        |                                            |                                     |                     |            |
**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, HCV, HPV diseases, Influenza, Hepatitis, Zika virus Adenovirus contamination. Continuous experiments have shown that a related new SARS-CoV, SARS-CoV2, also targets human host 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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