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Medicinal Plants and Phytochemicals Exhibiting Anti-HIV Activity Available in North-East India: An Overview

Hridoy Chakraborty^{1*}, Biplab De², Pintu Dhar³

- 1, State Drugs Testing Laboratory, Gurkhabasti, Agartala, Tripura, India, 799010
- 2, Regional Institute of Pharmaceutical Science & Technology, Abhoynagar, Agartala, Tripura, India, 799005
- 3, Dasda RD Block, Dasda, Kanchanpur, North Tripura, India, 799271

Corresponding author: *Hridoy Chakraborty*

Email Id: serviceheb@gmail.com, hridoychakraborty84@gmail.com

Abstract:

Acquired Immunodeficiency Syndrome (AIDS) is the third leading cause of mortality and morbidity worldwide. Despite significant advancements in HIV treatment through antiretroviral drug cocktails, challenges such as drug resistance, adverse reactions, and limited access to existing therapies persist. This underscores the urgent need for new anti-HIV agents to enhance our current arsenal of drugs and provide therapeutic options for populations with restricted access to effective treatments. Plant-derived natural products remain a valuable source for discovering new medicines, including anti-HIV agents. These plant-based drugs are generally safe and have minimal toxic effects. Northeast India, renowned for its rich biodiversity and ethnobotanical heritage, is home to numerous medicinal plants with potential anti-HIV properties. This overview delves into the array of phytochemicals found in these plants and their mechanisms of action against HIV. Ethnopharmacological data, alongside contemporary scientific research, highlights the significance of plants such as *Allium sativum L*, *Andrographis paniculata (Burm. f.)*, *Anogeissus acuminata*, *Berberis vulgaris*, and *Camellia sinensis (L.)*, among others, which demonstrate promising anti-HIV activity. Phytochemicals like alkaloids, flavonoids, tannins, and terpenoids have been identified for their ability to inhibit various stages of the HIV lifecycle, including viral entry, reverse transcription, integration, and protease activity. This review underscores the potential of these medicinal plants as sources of novel anti-HIV agents, advocating for further pharmacological studies and clinical trials to validate their efficacy and safety. Integrating traditional knowledge with modern scientific approaches

could lead to the development of effective, affordable, and accessible treatments for HIV, contributing to global health efforts to combat this pandemic.

KEY WORDS: Plants, Phytoconstituents, HIV, AIDS, Anti-HIV, North-East, Reverse transcriptase inhibitors.

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