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Anti HIV and Antibacterial property of coumarins isolated from *Sonchus oleraceus*

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Abstract: The acquired immunodeficiency syndrome (AIDS) is a result of human immunodeficiency virus (HIV) infection which leads to severe suppression of immune functions. Numerous plant derived compounds have been found to inhibit different steps in the HIV replication cycle. *Sonchus oleraceus* belongs to Asteraceae family have some medicinal property. The plant is a rich source of many biotic compounds which are of medicinal importance. The study was undertaken to investigate the anti-HIV and anti-bacterial activities of coumarin compounds extracted from the *Sonchus oleraceus*. Microwave assisted extraction method is followed for the extraction process using three solvents i.e. ethanol, methanol and water at different temperature for 5 min followed by one or two cycle extraction method. The obtained extracts were subjected to identification of coumarin using three different methods via, FeCl₃, fluorescence method and other coumarin test. Extracts were also subjected to phytochemical analysis to check the presence of other phytochemical compounds. Screening of coumarin compound for the inhibitory action against protease enzymes involve in the replication of HIV. The methanol extracts of *Sonchus oleraceus* have shown significant inhibition of protease activity as compared to standard (lopinavir).

Key words: HIV, AIDS, *Sonchus oleraceus*, Protease enzyme, lopinavir, coumarin

I. INTRODUCTION

AIDS is a pandemic immunosuppressive disease which results in life-threatening opportunistic infections and malignancies. Since a retrovirus, designated human immunodeficiency virus (HIV) has been clearly identified as the primary cause of this disease¹⁻². The replicative cycle of HIV comprises ten steps that could be considered suitable targets for chemotherapeutic intervention³. A number of laboratories are actively involved in the development of antiviral agents that interfere with HIV at different stages of viral replication⁴⁻⁵. The high mutation rate of HIV frequently results in the rapid development of resistance towards the drugs used, and an attempt has been made to circumvent this problem by using a combination of drugs⁶. A phytotherapeutic approach to modern drug development can provide many invaluable drugs from traditional medicinal plants. Over the last decade, antiviral researchers have also turned into many traditional folk medicines, invariably a “cocktail” of natural products, to uncover the scientific basis of their remedial effects. Many plant products are being used by patients with AIDS in some countries without any scientific proof that they possess anti-HIV activity. Traditional healers are now offering their remedies for scientific evaluation, and a number of studies provide information on the inhibitory activity against HIV of selected plants⁷⁻⁹. A large number of plant-derived substances have been described that exhibit anti-HIV activity, e.g., alkaloids, polysaccharides, lignans, flavonoids, coumarins and terpenes¹⁰⁻¹².