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Collagenase type II inhibitory activity of stem, root and leaf of *Cocculus hirsutus*

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Abstract

Herbal products prepared either from single or multiple botanical ingredients are usually complex and variable in nature. Undoubtedly, the plant kingdom still holds many species of plants containing substances of medicinal value that have yet to be discovered. For this reason, *Cocculus hirsutus* (L.) a medicinal plant belonging to family *Menispermaceae*, the perennial climber was selected for the present study. The study was formulated with the objective to assess the Collagenase inhibitory activity and standardization of *Cocculus hirsutus*. Pharmacognostical study, physicochemical study and Phytochemical study were performed of leaf, stem and the root of *Cocculus hirsutus*. The leaf, stem and the root of *Cocculus hirsutus* were extracted with solvents namely ethanol and 70% hydro-alcohol for the determination of Collagenase inhibitory activity. *Cocculus hirsutus* contained steroids, saponin, flavonoid and phenolics. Stem ethanolic extracts showed highest collagenase inhibitory activity than all other extracts. Again fractionation of stem ethanolic extracts of *Cocculus hirsutus* was done with petroleum ether, ethyl acetate, n-Butanol and residue. From that petroleum ether and ethyl acetate showed significant collagenase inhibitory activity. So it may conclude that collagenase inhibitory activity may be due to steroids and flavonoids.

Keywords: Collagenase type II, stem, root, leaf, *Cocculus hirsutus*

Introduction

Nature always stands as a golden mark to exemplify the outstanding phenomena of symbiosis. Natural products from plant, animal and minerals have been the basis of the treatment of human disease. Today estimate that about 80% of people in developing countries still relays on traditional medicine based largely on species of plants and animals for their primary health care.

Cocculus hirsutus belonging to the family *Menispermaceae* consists of 20 different species distributed in tropics and subtropics regions. *Cocculus hirsutus* is a scandent shrub, known as Chilahinta in Ayurveda and Kattu kodi in Siddha system of medicine. The plant grows all over India, especially in dry regions. Leaves are simple, alternate, ovate, sub deltoid or three lobed, obtuse and mucronate. The base of leaf is subcordate or truncate. Petioles are very short, dark green, usually subauriculate at the base. The plant is a climber with green flowers bloom in February-March and fruits in May-June ^[1, 2].

The roots and leaves are used to treat polyuria, eczema, dysuria, abdominal disorders, rheumatoid arthritis, fevers, piles, syphilis, disorders of blood and as an aphrodisiac. Roots and leaves possess antimicrobial, cardiogenic, hyperglycaemic, diuretic, laxative and epileptic activity. In Sind, leaves are used in headache and neuralgic pains (Murray). The juice of the leaves, mixed with water, has the property of coagulation into a green jelly-like substance, which is taken internally, sweetened with sugar, as cure for gonorrhea ^[3, 4].

Arthritis is a form of joint disorder that involves inflammation of one or more joints ^[5]. There are over 100 different forms of arthritis. The most common form, osteoarthritis (degenerative joint disease), is a result of trauma to the joint, infection of the joint, or age. Other arthritis forms are rheumatoid arthritis, psoriatic arthritis, and related autoimmune diseases. Septic arthritis is caused by joint infection. The major complaint by individuals who have arthritis is joint pain. Pain is often a constant and may be localized to the joint affected. The pain from arthritis is due to inflammation that occurs around the joint, damage to the joint from disease, daily wear and tear of joint, muscle strains caused by forceful movements against stiff painful joints and fatigue ^[6].

Collagen Type II is composed of a triple helix of three identical a chain. These molecules associate to form a fibril that is stabilized by intermolecular crosslinks.

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