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MUEHLENBECKIA PLATYCLADA (POLYGONACEAE) AN OVERVIEW

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ABSTRACT

The plant *Muehlenbeckia platyclada* belonging to Polygonaceae family has great importance in traditional medicine. It is popular remedy in various ethnic groups. Extensive studies show the presence of flavanoid glycosides in it. *Muehlenbeckia platyclada* is found to possess antinociceptive and analgesic activity. This work gives an overview of phytochemical and pharmacological evidence of *Muehlenbeckia platyclada*. Although more studies are necessary to explore therapeutic potential of the plant as it has more therapeutic activities which are not known.

KEYWORDS: *Muehlenbeckia platyclada*, Antinocicepive activity, Analgesic activity, Flavanoids.

INTRODUCTION

Medicinal plants have long played important roles in the treatment of diseases all over the world.[1] World health organization (WHO) recently has published a strategic plan for the development and promotion of traditional medicine. The release of this strategic plan shows the importance of this reliable source for the treatment and prevention of diseases. Nowadays there is revival of interest in the consumption of herbal medicines in the form of standardized extracts, partly due to their multiple side effects, and high cost of patentable chemical drugs.[2] The genus *Muehlenbeckia* is constituted by four species belonging to the family Polygonaceae.Plants of this genus, such as *Muehlenbeckia platyclada* (F. Muell.) Meisn. are

found in South America, and have been traditionally used as diuretic, hypotensive, antihemorragic, sedative, antirheumatic, abortive, cicatrizant, antiulcerogenic, anti-inflammatory and anthelmintic agents.[3,4]

Plant description: *Muehlenbeckia* or the maidenhair genus is native to the Southern Hemisphere, especially South America, Papua New Guinea, Australia and New Zealand, and has been introduced both by birds and cultivation to temperate locales north of the equator.[5] Some are tiny alpine mat-forming plants whereas others are vigorous vines with masses of dark stems and minimal small bronze-tinged leaves. It *is also known by name Homalocladium platycladum* (centipede plant, tapeworm plant or ribbon bush). This plant belongs to i the knotweed family from New Guinea and the Solomon Islands.[6]

Fig. 1: *Muehlenbeckia platyclada.*

Fig. 2: Scaly leaves of *Muehlenbeckia platyclada.*

Phytochemical studies: Yen CT et al carried out phytochemical studies on methanolic extract of *M. platyclada*. The structures of these compounds were determined on the basis of chemical and spectroscopic evidence, as well as acid hydrolysis of the original glycoside. Among the active compounds found in *M. platyclada*, the flavanoids (morin-3-*O*-α-rhamnopyranoside, kaempferol-3-*O*-α-rhamnopyranoside, kaempferol-3-*O*-β-glucopyranoside, quercetin 3-*O*-α-rhamnopyranoside and (+)-catechin), were reported.[7]

However, in species of *Muehlenbeckia*, such as *M. tamnifolia*, free anthraquinones (chrysophanic acid, emodin, and rhein) and glycoside anthraquinones have been identified[8] Epicatechin, emodin-8-glycoside and rutin were identified from the aerial part and the root of *M. hastulata*.[9]

Pheophorbide A, hypericin and protohypericin, isolated from this specie, demonstrated potent activity against influenza virus.[10]

The chloroform, butanol and aqueous extracts as well as flavanoids isolated from *M. platyclada* inhibited the generation of superoxide anion and elastase released by human neutrophils, indicating anti-inflammatory activity.[7]

Pharmacological studies: The chloroform, butanol and aqueous extracts as well as flavanoids isolated from *M. platyclada* inhibited the generation of superoxide anion and elastase released by human neutrophils, indicating anti-inflammatory activity.[7]

Considering pharmacological studies, *M. hastulata* possesses significant oxytocic and analgesic activities.[9]

The methanolic extract of *M. platyclada* did not exhibit activity against *Bursaphelenchus xylophilus.*[11]

M. platyclada leaves possesses antinociceptive and anti-inflammatory activities that could be related to the synergistic activity of the bioactive compounds, particularly flavanoids, triterpenes, saponins, and steroids. The results support the folklore use of this plant, but phytochemical studies together with pharmacological and toxicological investigations are essential for complete understanding of the medicinal application.Antinociceptive activity was evaluated by Formalin-Induced Nociception in Mice and Hot-Plate Latency Assay in Mice.[12]

Anti-inflammatory activity was assessed using paw edema induced by the injection of carrageenan (an edematogenic agent) into the subplantar region of the right hind paw of the rat and also by Carrageenan-Induced Pleurisy in Rats.[13]

Separation of the leaves extracts of *Muehlenbeckia platyclada* Meissn based on in vitro antibacterial activity against *Staphylococcus aureus* ATCC 25923 and Escherichia coli ATCC 25922 resulted in the isolation of a flavanol glycoside. The aglycone was identified as quercetin based on UV, IR, NMR and mass spectral studies.[14]

CONCLUSION

The above collected information of *Muehlenbeckia platyclada* matches with available literature. Natural products have contributed in the discovery of modern drugs. This plant may have many phytoconstituents which may be useful in various pathological conditions.Researhers are exploring therapeutical potential of this plant as it has more therapeutic properties which are not known.

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