

## Pharmacological Potentials of Plants from Asteraceae-A Review

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**ABSTRACT:** Medicinal plants are a reservoir of biologically active compounds with therapeutic properties that over time have been reported and used by diverse groups of people for treatment of various diseases. Plants represent a major source of chemo-diversity on the planet, and it is likely that some safe and effective plant compounds can be found that could help to protect human lives from the devastation of COVID-19. In the scientific databases, there are huge numbers of research articles about the antiviral, antifungal, antibacterial, antiviral, and anthelmintic activities of medicinal herbs and crops with different ethnobotanical background. Recent advances in the ethnomedicinal, phytochemical, and pharmacological studies of Asteraceae are reviewed in this study.

**Keywords:** Ethnobotanical, Asteraceae, Antiviral

### I. INTRODUCTION

Asteraceae considered being one of the largest family of flowering plants (angiosperms), having distributed throughout the world. This family can be easily recognized by its characteristic feature of inflorescence. Asteraceae plant family is also used to be known as the Compositae plant family, is known as one of the largest plant families with thousands of plant species. Its large production as angiosperm phylogeny is in Asteridae. The Asteraceae plant family consists of 24,000 accepted species. It also has about 1,600 to 1,700 of its genera is distributed around the world, excluding Antarctica. This family is also known as a cosmopolitan family, as it has a great concentration of species in different areas such as temperate, cold-temperate, and subtropical. As a complement to the recommended COVID-19 prophylaxis, the evaluation of the effectiveness of plant extracts of different medicinal herbs and crops and natural antiviral compounds could be included in randomized controlled testing of large populations. Therefore, the present review presents detailed characteristics of medicinal plants and crops based on their ethnobotanical background, the plant part used, their antiviral potential, and already known plant-based antiviral compounds.

### BIOLOGICAL ACTIVITIES

#### ANTICANCER

Arctium lappa fruit has been used in traditional medicine, and it is popular for its various anticancer effects. Arctigenin (ATG), a natural lignan product extracted from the seeds of Arctium lappa, has been shown to have estrogenic properties, that reduced the risk of osteoporosis, heart disease, and menopausal symptoms. It was found to possess antitumor effect by modulating the protein kinase activation pathway and hence rendering the tumor cells susceptible to effects of the nutrient-deprived environment

#### ANTIDIABETIC

It exerts its effects through hypolipidemic and insulinotropic properties and hence the root extract could serve successfully in treating patients with type 2 diabetes in the future. Moreover, sitosterol- $\beta$ -D-glucopyranoside from burdock's root acts as a potent inhibitor of  $\alpha$ -glucosidases, thereby having the potential to reduce glycogenolysis and help to decrease blood glucose level

#### ANTIDEPRESSANT

The active principles present in the extract of Sonchus oleraceus had an antidepressant like effect which was found to be comparable to that of amitriptyline.

#### ANTIMICROBIAL

Sonchus extracts (*S. arvensis*, *S. asper*, *S. uliginosus*, *S. brachyotus* and *S. lingianus*), both in Gram-negative bacteria (*Escherichia coli*, *Salmonella enterica* and *Vibrio parahaemolyticus*) and in a Gram-positive bacterium (*Staphylococcus aureus*)

#### ANTIUROLITHIC

*Aaronsohnia pubescens* K. Bremer & Humph. Leaves infusion --- Libya  
*Achillea ageratum* L. Dioscorides (*De Materia Medica*): Whole plant is diuretic.

*Achillea falcata* L. Aerial parts infusion ---  
LebanoN.

Pharmacological activities: Antispasmodic,  
litholytic.

*Achillea fragrantissima* (Forssk.) Sch.Bip. Shoots -  
-- Jordan [37] .

#### ANTI-INFECTIVE

The treatment of wounds has challenged health professionals due to its complexity, especially in patients with chronic diseases (such as diabetes), and the presence of pathogens such as *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Taking this into consideration, the development of new therapies for wound healing requires immediate attention. Ethnopharmacological studies performed in different countries have shown the use of several plants from the Asteraceae family as wound-healing agents.

*ex.geratina pichinchensis* (Kunth) R.M. King and H. Rob. and *Calendula officinalis* L. preparations/compounds were found to show good efficacy when assessed in clinical trials of complicated wounds, including venous leg ulcers and foot ulcers of diabetic patients.

The compounds silybinin (from *Silybum marianum* (L.) Gaertn.) and jaceosidin (from *Artemisia princeps* Pamp.) were identified as promising compounds for the treatment of wounds.

#### ANTIOXIDANT

The chemical substances that reduce or prevent oxidation are known as antioxidants. Antioxidants can resist the free radicals from causing damaging effects in tissues. They are often used to safeguard cerebrovascular diseases.

The oxidative stress that occurs at the cellular level acts as the prime pathogenic factor for cardiovascular diseases

The plants from the Asteraceae family that shows antioxidant effect based on this study are *Achillea tenuifolia* Lam. (syn. *Achillea santolina* L.), *Anthemis melampodina*

subsp. *deserti* (Boiss.) Eig (syn. *Anthemis deserti* Boiss), *Artemisia absinthium* L., *Baccharis trimera* (Less.) DC, *C. crepidioides* (Benth.) S. Moore, *Helichrysum leucocephalum* Ausfeld, *Laggera decurrens* (Vahl) Hepper and J. R. I. Wood, *Senecio ovatus* subsp. *stabianus* (Lacaita) Greuter (syn. *Senecio stabianus* Lacaita), and *Silybum marianum* (L.) Gaertn.

These plants had shown the antioxidant effect, with its scientific value.

#### ANTIHYPERLIPIDEMIA

The plants from Asteraceae are *Achillea arabica* Kotschy (syn. *Achillea biebersteinii* Hub.-Mor.), *Ageratum conyzoides* L., *Chromolaena odorata* (L.) R. M. King and H. Rob., *C. crepidioides* (Benth.) S. Moore, *C. cardunculus* L. (syn. *Cynara scolymus* L.), *Eclipta prostrata* (L.) L., *E. praetermissa* Milne-Redh, *Gundelia tournefortii* L., *Gymnanthemum amygdalinum* (Delile) Sch. Bip. (syn. *Vernonia amygdalina* Delile), *Inula racemosa* Hook F., *Launaea intybacea* (Jacq.) Beauverd (syn. *Lactuca runcinata* DC.), *Solidago chilensis* Meyen, *Sphaeranthus indicus* L., and *Vernonia elaeagnifolia* DC.

#### ANTIMICROBIAL&ANTIMYCOTIC

Antibacterial and antimycotic activities of crude plant extracts were examined by the well diffusion method according to Ríos et al. The n-hexane plant extracts from *Aspilla quinquenervis* and *Chromolaena tequendamensis* gave moderate and weak activities respectively against *B. subtilis* while the dichloromethane and methanol extracts from *C. tequendamensis* exhibited weak activities against *S. aureus*.

#### ANTIVIRAL

*Artemisia* sp. (*Artemisiaabsinthium*) belongs to Asteraceae Whole plant Reduces coronavirus replication and alsoshows antibacterial, anti-inflflammatory effect. *Cichorium intybus* shows Immunomodulation; antiviral activity against HSV-1 and adenovirus type 5. *Echinacea angustifolia* shows Antiviral activity against cold and flu viruses; inhibits viral growth and secretion of pro-inflflammatory cytokines

#### PHYTOCONSTITUENTS

Based on the studies, antioxidant properties were mostly exhibited by phenolic compounds due to their tendency to scavenge the free-radicals. The phenolic compounds act by chelating the metal ions, improving the endogenous antioxidant system, and avoiding the formation of free radicals. Other chemical compounds in these plants that mainly contribute to its antioxidant activity are flavonoids, flavanols, and diterpenes. Most of the bioactives have been identified in the flowering plants are mainly flavonoids, but also phenolic acids, coumarines, pyrones, chalcones, sterols, glycosides, and lignans

## II. CONCLUSION

The present study makes several noteworthy contributions of various species of Genus under Asteraceae and it may act as a potential target against pandemic diseases and their serious secondary symptoms.

## III. ACKNOWLEDGEMENT

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