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Medicinal potential of *Digitaria*: An overview

Kanupriya, Manoj Kumar and Asha Sharma and Anju Dhiman**Abstract**

Digitaria belong to the family poaceae is a very large family of monocotyledonous plants and have large economic and ecological value. *Digitaria* commonly known as crabgrass, various parts of this grass of different species have anti-ulcer, anti-helminthic, anti-inflammatory, anti-diabetic, anti-depressant activity. Various phytopharmacological activity evaluations regarding *Digitaria* have been reported in this literature for the important potential of *Digitaria*.

Keywords: poaceae, *Digitaria*, phytochemicals**Introduction**

Poaceae is a very large family of monocotyledonous plants, it got the first place in economy in the production of sugar, bamboo, pasture, cereals. It is one of the largest vascular plant family. The plants belong to this family have large economic and ecological value [1]. This family have great medicinal value as it includes all bamboos, cereals and sugarcane. There are many phytoconstituents like terpenoids, steroids, saponins, volatile oils, flavanoids, fatty acids which are present in poaceae family. Most of the poaceae plants are used as folk medicines as antidiabetic, anthelmintic, antiulcer, astringent, diuretic, antioxidant agents, anti-hypersensitive, anti-inflammatory [2]. Grasses are important group of monocotyledonous plants belong to the family poaceae, there are about 100 secondary metabolites have been isolated from different grasses. Plants like *Triticum*, *Bamboos*, *Stipagrostis plumose*, *Cymbopogon citratus*, *Cynodon dactylon*, *Desmostachya bipinnata*, *Imperata cylindrical* all these grasses belong to the poaceae family show many properties like ulcerative colitis, anti-ulcer activity, antispasmodic activity, anti-nociceptive, anti-diarreheal, wound healing, cardio protective action, antibacterial, antihysterical, antipyretic etc. As grasses show certain biological activities therefore science is founding future of grasses of poaceae family in traditional medicines [3].

Digitaria commonly known as digit grass and also consider as weeds in turfgrass system and in agriculture also. *Digitaria* derived from latin *digitus* (finger) that means it seems like to radiating inflorescence branches [4]. *Digitaria* collective names refers as "finger grass". There is great species within *Digitaria*, it might be annual or perennial with or without stolons, with or without rhizomes, erect or may be prostrate. This genus varies in inflorescence structure length of spikelet scales, spikelet indumentums types. *Digitaria* either mesophytic or xerophytic mostly grown in open habitats. *Digitaria* differ in leaf architecture and in amount of hairs also. *Digitaria* also known as crabgrass produce large amount of seeds and a single plant can produce upto 1,88,000 seeds. *Digitaria* is the most competitive C₄ weeds of horticulture, agriculture and turfgrass landscape in temperate and tropical regions [5]. Having C₄ photosynthetic pathway *Digitaria* have the ability to tolerate dry conditions, hot and very competitive during the summer when C₃ plant come under stress. Here we discuss about the literature of some pharmacological properties of species belong to *Digitaria*. Likewise *Digitaria exilis*, *Digitaria iburua*, *Digitaria radicata*, *Digitaria insularis*, *Digitaria horizontalis*, *Digitaria sanguinalis*.

Pharmacological aspects of *Digitaria*

Phytochemicals occurs naturally and biologically active compounds which are found in *Digitaria*. Phytochemicals acts as natural defense system and also provide colour, aroma and flavor to the plant and also have disease preventive properties [6]. Some of the major phytochemicals which are found in genus *Digitaria* are terpenoid, volatile oils, alkaloids, flavanoids, phenolics, tannins.

Digitaria exilis and *Digitaria iburua* belong to the *Digitaria*, both these species are nutritionally very important in West Africa people prefer these species to other cereals. It was found out that both these species have nutraceutical properties for e.g. antioxidant phenolics and cholesterol-lowering waxes [7]. Both these species are also helpful in prevention and in

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treatment of constipation, hypertension, cardiovascular diseases^[8]. *Digitaria exilis* is gluten free which make it easy to digest and rich source of protein^[9]. From fermented *Digitaria exilis* several lactic acid bacteria were isolated having pro-biotic potential such as antimicrobial production, acid and gastric juice tolerance, antibiotic resistance, bile salt and sodium chloride tolerance.

Digitaria radicata, is a herbal species and well-known for its medicinal properties. It was investigated that green synthesis of stable silver nano particles from the methanolic extract act as potent free radical scavenger and also possess antibacterial activity towards pathogens^[10].

Digitaria insularis show acaricidal activity against *Rhipicephalus* (*Boophilus*) *microplus*. It was found out that hexane and ethyl acetate extract of leaves of *Digitaria insularis* show acaricidal effect because it has the ability to cross the cuticle of adult *Rhipicephalus* (*Boophilus*) *microplus* and intracellularly^[11]. *Digitaria insularis* show anthelmintic action against gastrointestinal nematodes of goat^[12].

Digitaria horizontalis used in traditional African medicines, it is mainly used in the treatment of neurological disorder. Studies prove that there is neuropharmacological activities of *Digitaria horizontalis* in mice and also found out that *D. horizontalis* possess sedative, antinociceptive and antidepressant effects. *Digitaria horizontalis* could be used as phytotherapeutic agent in the treatment of neurological disorder^[13].

Digitaria sanguinalis also known as hairy crabgrass, perennial and tufted grass with rhizomiferous main stems. There are three phytotoxic chemicals were isolated from the extracts of *Digitaria sanguinalis* i.e. veratric acid, maltol and (-)-loliolide^[14]. Veratric acid which was identified in crabgrass *Digitaria sanguinalis* is derived from lignin and mostly found out in many kinds of plants and in their growing soils^[15, 16]. Veratric acid show many kind of bioactivities such as anti-inflammatory and anti-fungal activities. Second maltol is usually used as a food additive and also a bidentate metal ligand for administered drugs^[17]. Third is (-)-loliolide which occur in marine algae and many plant families^[18, 19]. (-)-Loliolide show many bioactivity such as antimicrobial^[20], antifeedant, herbicidal^[21], anti-algal^[22]. The methanol extract of leaf of crabgrass *Digitaria sanguinalis* was proven to have moderate anti-MRSA activity^[23]. *Digitaria sanguinalis* also show antimutagenic activity^[24].

Conclusion

There are various phytochemicals and pharmacological studies have been done on *Digitaria* and there are still many unexplored areas which are yet to be investigated. Our present literature show the potential of *Digitaria* that it has many medicinal values. Therefore in view of the nature of more research can be done to explore the medicinal value of *Digitaria*.

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