



Review article

**Ethnobotany and pharmacognosy of tribe maydeae (poaceae)**

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**ABSTRACT**

Grasses (Poaceae) are the monocotyledonous, herbaceous plants with cosmopolitan in distribution. In food chain and ecology, it plays an important role as a base resource. Maize is the well-known plant of tribe Maydeae of the family Poaceae which is used all over the world for food, fodder, beverages and primary source for production of milk and meat. Only few grasses are well-known for their medicinal value. Present study is an overview of Tribe Maydeae with special approach to endemic wild relatives and in context of future aspect in ethnomedicinal and pharmacological studies.

**Keywords:** Ethnobotany, Maydeae, Pharmacognosy, Poaceae, Taxonomy

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**INTRODUCTION**

Among the plant kingdom Family Poaceae Barnhart is one of the highly advanced plant group. The survival strategies in the course of evolution like adaptability to environment, physiological stress, scarcity of water and food make them to induces many physiological activities to overcome adverse impacts and leads to survival strategies, the strategies may physical or chemical. The chemical components are biologically active, which are used to improve their own survival strategies as herbicide as to avoid the growth of competent plant or insects; usually these components are secondary metabolites<sup>[1, 2]</sup>.

Each plant is a repository of these secondary metabolites, these important chemical constituents are extracted and used by humans for various purposes especially as medicines considered as an important source of various chemical constituents to treat or prevent various kinds of the diseases.<sup>[3]</sup> From centuries humans are used various natural sources (Viz. plants, animals, fungi, minerals and microbes) for overcome diseases. Plants are used in traditional medicine by most of tribal peoples for enhancing life style and many of these don't have any scientific data to confirm their efficiency as a medicinal plant. After communication with these peoples these plants have to categorised in to the medicinal plant.<sup>[4]</sup> This crude knowledge about the plant is used by the pharmacists and pharmacologist to

describe whole plants or parts of plants which have medicinal properties<sup>[5]</sup>. Which gives these neglected plant knowledges a platform in global market? Present communication is the small step towards it.

Present study is an overview of Tribe Maydeae with special approach to endemic wild relatives and in context of future aspect in ethnomedicinal and pharmacological studies. Globally, tribe Maydeae represented by 40 species which includes genera Coix L., Polytoca R. Br., Trilobachne M. Schenck ex Henrard, Tripsacum L. & Zea L. In which India is blessed with 15 species. Genus Coix, Polytoca, Trilobachne are the wild relatives of the genus Zea and these are native to India and Indian sub-continent.<sup>[6]</sup> Authors are doing systematic studies of tribe Maydeae in India from past two years; comprises taxonomic revision, morphological studies, population analysis and cytological studies. Which gives primary information regarding tribe maydeae in India? Which helps to Pharmacologist to explore this unknown treasure as only few species in India were studied, Coix aquatica, C. lacryma-jobi var. lacryma-jobi, C. lacryma-jobi var. Ma-yuen in context with ethnomedicinal and pharmacological view. Another taxa (C. lacryma-jobi var. stenocarpa and C. lacryma-jobi var. pulleram) and genera Polytoca and Trilobachne are remained unexplored.<sup>[7-8]</sup>

**MATERIALS AND METHODS**

Members of maydeae from South India were collected through extensive field survey and identified by various literatures [9] herbarium specimens were prepared by standard method [10]. Seeds were collected and dried under shade for further studies. In this communication, ethnobotanical and pharmacological information

recorded based of field survey and literature [11]. During the field visits local peoples were encouraged to share their views and information as identification, local names, collection times, parts used for medicinal purpose, application and threats.[12]

**RESULT AND DISCUSSION**

Table 1: Ethnobotanical, drug component and application tribe Maydeae.

Taxa	Ethnobotanical use	Drug	Application	References
Coix L. 1. <i>C. lacryma-jobi</i> 2. <i>C. lacryama-jobi</i> var. <i>ma-yuen</i>	As ornament Eaten raw or roasted by tribal peoples Decoction used as food and beverages, Urinary tract infection, tonic, diuretic, strangury and the menstrual complaints	Kanglaite, Coixenolide, $\beta$ -sitosterol, $\gamma$ -sitosterol, stigmasterol	potential treatment for pancreatic and prostate cancer, diuretic, spleen, lung, dispel dampness and heat, eliminate edema, discharge pus, stop diarrhoea, antipyretic, analgesic and sedative effects, and has an exciting effect on isolated heart, intestine and uterus, hyperlipidaemia, hypertension, stroke and cardiovascular diseases	Ukita & Tanimura, 1961; Xi et al., 2016; Jiang et. al. 2007; Patel et. al. 2017, Sofowora et. al. 2013, Ali 2019, Jain & Banerjee 1974, Feng et. al. 2020, Ragasa et. al. 2014, Nghiem et. al. 2016
<i>Coix aquatica</i> R.Br.	As ornament Eaten raw or roasted by tribal peoples	Nil	Nil	Nil
<i>Coix lacryma-jobi</i> var. <i>puellarum</i> (Balansa) E.G.Camus & A.Camus	Nil	Nil	Nil	Nil
<i>Coix lacryma-jobi</i> var. <i>stenocarpa</i> Oliv.	Nil	Nil	Nil	Nil
<i>Polytoca digitata</i> (L.f.) Druce	Nil	Nil	Nil	Nil
<i>Polytoca gigantea</i> (J.Koenig) Mabb.	Leaves & Roots used to prepare dye	Nil	Nil	Susiarti et. al. 2018
<i>Polytoca punctata</i> (R.Br.) Hook.f.	Nil	Nil	Nil	Nil
<i>Polytoca semiteres</i> Benth. ex Hook.f.	Nil	Nil	Nil	Nil
<i>Polytoca wallichiana</i> (Nees ex Steud.) Benth.	Nil	Nil	Nil	Nil
<i>Trilobachne cookei</i> (Stapf) Schenck ex Henrard	Nil	Nil	Nil	Nil

**Coix:** In relation to medicinal and agricultural value Coix has very long back history (almost 2000 years back). Humans started cultivating it almost early than the rice; but mostly for its good uniform size, naturally glossy, various coloured, durable beads [13]. China, India and Indian subcontinents use it as a traditional medicine as diuretic, spleen, lung, dispel dampness and heat, eliminate edema, discharge pus & stop diarrhoea. Mostly effective on the potential treatment for pancreatic and prostate cancer, diuretic, spleen, lung, dispel dampness and heat, eliminate edema, discharge pus, stop diarrhoea, antipyretic, analgesic and sedative effects, and has an exciting effect on isolated heart, intestine and uterus.[14] Modern drug analysis led to various novel chemical constituents in Coix like Kanglaite & Coixenolide which having potential anticancer activity (Tab: 1). *C. lacryma-jobi*, *C. lacryama-jobi* var. *ma-yuen* are the cosmopolitan and most studied taxa in relation to agricultural and medicinal values but its other wild relatives *C. aquatica*, *C. lacryama-jobi* var. *stenocarpa* and *C. lacryama-jobi* var. *pulleram* are neglected as they have potential as equal as them.[15] It may be due to less knowledge of its identification or may be due to its restricted habitat.

Other than two species and one variety of Coix there is no single record of any taxa in the tribe. Wild relatives are the enriched

resource of food and medicines also in novel chemical constituents. Most of the members of tribe Maydeae have both medicinal and edible values but only some of them are well studied. Therefore, it is necessary to conduct a thorough research and development in medicinal and health food of Maydeae.

**CONCLUSION**

In considering tribe Maydeae it not only a traditional medicinal plant or an edible crop group but it has potential of modern medicinal plant group too. The present communication is to give a primary information on wild and endemic relatives of well-known crop maize. Highlight there traditional and modern medicinal values and encourage the pharmacists, drug researcher to acquire the knowledge of our own hidden treasure and increase the key technology of medicinal components in tribe Maydeae.

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