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ESTIMATION OF TOTAL PHENOL OF GENUS SESBANIA OF MARATHWADA REGION IN MAHARASHTRA

V. B. KADAM¹, R. K. MOMIN², SUMIA FATIMA³, P. P AHIRE¹

1. P.G. Dept. of Botany and Res. Centre , K.T.H.M. College , Nashik – 422 002
2. Department of Botany, Milliya Arts, Science and Management Science College, Beed.
3. Dept. of Botany, Dr. Rafiq Zakaria College for Women, Aurangabad – 431 005.

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Abstract: An attempt has been made here to investigate occurrence of total phenol in the leaves , bark and wood of *Sesbania grandiflora* ,*Sesbania bispinosa* and *Sesbania cannabina* are medicinally important plants of Marathwada region in Maharashtra. Comparative account of total phenol content of leaves ,bark and wood of three species revealed that , *Sesbania grandiflora* were rich (range 3.11 to 5.42 mg/g dry wt.) than *Sesbania bispinosa* (range 2.67 to 4.62 mg/g dry wt.) and *Sesbania cannabina* (range 2.37 to 4.26 mg/g dry wt.) in all seasons.

Keywords: Total Phenol, Medicinal Plants, Marathwada region



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Corresponding Author: Dr. V. B. KADAM

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INTRODUCTION

There are many phenolic compounds which have gained importance as plant growth regulators in recent years. The phenolic compounds have been found to occur in micro-organisms, pteridophytes, gymnosperms and angiosperms. Earlier, most of the phenolic compounds are believed to be inhibitory in nature. From careful studies with the different concentrations of phenolic compounds it followed that many of them could stimulate physiological and biochemical processes at very low concentration.

Sesbania grandiflora commonly known as agathi has been used as an important dietary nutritive source in Southeast Asian countries. *Sesbania grandiflora* are richest source of amino acid, minerals and antioxidants vitamins. Various parts of this plant are used in Indian traditional medicine for the treatment of diuretic, emetic, fevers, headaches, smallpox, anemia, bronchitis, inflammation, leprosy, gout, rheumatism, anxiolytic, anticonvulsive and hepatoprotective (Pari and Uma, 2003). It also has anxiolytic and anticonvulsive, (Kasture et al 2002) anti-inflammatory, analgesic and antipyretic activity. Beside *Sesbania grandiflora* is mentioned as potent antidotes for tobacco and smoking related

diseases. *Sesbania grandiflora* has hypolipidemic property on cigarette smoke exposed rats (Ramesh and Hazeena begum, 2006). Dhaincha (*Sesbania bispinosa*) is a crop generally cultivated for its nutritive

value to soil. It is cultivated in monsoon season almost throughout India and grows well in loamy, clayey, black and sandy soils. It is an ideal green manure crop as it is quick growing, succulent, and easily decomposable with low moisture requirements and produces maximum amount of organic matter and nitrogen in the soil. Seed flour is used in the treatment of ringworm, skin diseases and wounds. The mature seeds of this species are known to be cooked and eaten by the Indian tribals, Katkharis and Ghonds (Siddhuraju et al., 1995b). *Sesbania cannabina* resorted to be aperient, diuretic, emetic, emmenagogue, febrifuge, laxative, and tonic, agathi is a folk remedy for bruises, catarrh, dysentery, eyes, fevers, headaches, smallpox, sores, sore throat, and stomatitis. Bark, leaves, gums, and flowers are considered medicinal. The astringent bark was used in treating smallpox and other eruptive fevers. The juice from the flowers is used to treat headache, head congestion, or stuffy nose. Legume seeds are valuable source of protein, oil, carbohydrates, minerals and vitamins. They are playing an important role in human nutrition mainly in developing countries (Mohamed and Rangappa, 1992; Yanez et al., 1995).

MATERIALS AND METHODS

The plant material of *Sesbania grandiflora*, *Sesbania bispinosa* and *Sesbania cannabina* were collected from different places of Marathwada region in Maharashtra during

different seasons viz. summer (April) , monsoon (July) and winter (December) . The ethanol extractable phenolic compounds were estimated by folin method of Swain and Hillis (1959) .

Phenolic compounds were extracted by grinding 50 mg (dry weight) sample of tissue using a chilled pestle and mortar with an aliquot of chilled 80 % (V / V) ethanol . The homogenate was centrifuged at 13000 rpm for 15 minutes. The supernatant was collected and residue pellet was extracted twice more as above . The supernatant of all three extractions was pooled and volume made up to 25 ml with 80 % ethanol . A suitable aliquot of the ethanolic extract was diluted with distilled water to 8.5 ml and after adding 0.5 ml of Folin phenol reagent . The content were mixed well , three minutes latter , 1 ml of saturated sodium carbonate solution (1 gm / 3 ml) of distilled water was added and the mixture shaken thoroughly . Colour was allow to develop for 60 minutes and then read at 725 nm in spectrophotometer . Standard curved was prepared using chlorogenic acid / tannic acid / gallic acid and all the concentrations were expressed in terms of mg / g of this compound .

RESULTS AND DISCUSSION

The concentration total phenol of *Sesbania grandiflora* was ranging from (5.31 to 5.42 mg/g dry wt.) in leaves . The total phenol content of leaves of *Sesbania grandiflora*

exhibited maximum levels in summer (5.42 mg/g dry wt.) Over that of monsoon (5.31 mg/g dry wt.) And winter (5.36 mg/g dry wt.) (Table 1.) . The total phenol content of wood of *Sesbania grandiflora* was not significantly different (as it ranges between 3.11 to 3.22 mg/g dry wt.) from other parts during various seasons . The repeated measuring of total phenol continuously for two years proved that there was no much difference in their different parts . The total phenol content of bark of *Sesbania grandiflora* was raised in summer (4.82 mg/g dry wt.) over that of monsoon (4.71 mg/g dry wt.) and winter (4.77 mg/g dry wt.) .

The total phenol content of leaves of *Sesbania bispinosa* was higher in summer (4.62 mg/g dry wt.) over that of winter (4.57 mg/g dry wt.) and monsoon (4.52 mg/g dry wt.) . Total phenol content of bark of *Sesbania bispinosa* ranged from (ranged from 4.07 to 4.19 mg/g dry wt.) . Comparatively wood of *Sesbania bispinosa* exhibited low concentration of phenol content (ranged from 2.67 to 2.76 mg/g dry wt.) . The total phenol content of leaves of *Sesbania cannabina* was higher in summer (4.26 mg/g dry wt.) over that of winter (4.19 mg/g dry wt.) and monsoon (4.14 mg/g dry wt.) . Total phenol content of bark of *Sesbania cannabina* (ranged from 3.58 to 3.67 mg/g dry wt.) . Comparatively wood of *Sesbania cannabina* exhibited low concentration of phenol content (2.37 to 2.47 mg/g dry wt.) .

The total phenol content of leaves of *Sesbania grandiflora* was higher (ranged from 5.31 to 5.42 mg/g dry wt.) than *Sesbania bispinosa* (ranged from 4.52 to 4.62 mg/g dry wt.) and *Sesbania cannabina* (ranged from 4.14 to 4.26 mg/g dry wt.). Comparatively bark of *Sesbania grandiflora* was higher (ranged from 4.71 to 4.82 mg/g dry wt.) than *Sesbania bispinosa* (ranged

from 4.07 to 4.19 mg/g dry wt.) and *Sesbania cannabina* (ranged from 3.58 to 3.67 mg/g dry wt.). Comparatively phenol content of wood of *Sesbania grandiflora* was higher (ranged from 3.11 to 3.22 mg/g dry wt.) than *Sesbania bispinosa* (ranged from 2.67 to 2.76 mg/g dry wt.) and *Sesbania cannabina* (ranged from 2.37 to 2.47 mg/g dry wt.).

Table 1.- Total Phenol content in different plant part of *Sesbania grandiflora*, *Sesbania bispinosa* and *Sesbania cannabina*.

		TOTAL PHENOL		
Plant parts	Season	(Mg / g dry wt.)		
		<i>Sesbania grandiflora</i>	<i>Sesbania bispinosa</i>	<i>Sesbania cannabina</i>
Leaves	Summer	5.422	4.623	4.267
	Monsoon	5.311	4.523	4.147
	Winter	5.367	4.579	4.199
Wood	Summer	3.221	2.769	2.478
	Monsoon	3.111	2.676	2.375
	Winter	3.176	2.700	2.425
Bark	Summer	4.823	4.190	3.678
	Monsoon	4.719	4.070	3.582
	Winter	4.774	4.134	3.632

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