



International Journal of Biomedical Investigation

Available Online: <http://ijbi.edwiserinternational.com>

Biochemical Profile of Senna tora Linn.

Rahul Gaykhe, Shazeen Khan and Vasant Kadam*

Department of Botany and Research Centre, K.T.H.M. College, Nashik, India

Article info

Received 26 July 2018

Revised 12 December 2018

Published 17 December 2018

*Corresponding author: V. B. Kadam, Department of Botany and Research Centre, K.T.H.M. College, Nashik, India E-mail: drvbkadam@yahoo.com

Abstract

The seasonal variation of phenol, tannin and ascorbic acid content have been investigated from leaves, stem, root and seeds of Senna tora. Comparative account of phenol contents of Senna tora showed higher level in leaves (range 5.740 to 6.408 mg/g dry wt.) than stem (range 3.768 to 4.419 mg/g dry wt.), root (range 1.284 to 1.828 mg/g dry wt.) and seeds (3.873 mg/g dry wt). Comparative account of tannin contents of Senna tora showed higher level in leaves (range 0.356 to 0.410 mg/g dry wt.) than stem (range 0.300 to 0.356 mg/g dry wt.), root (range 0.112 to 0.156 mg/g dry wt.) and seeds (2.940 mg/g dry wt.). Comparative account of ascorbic acid contents of Senna tora showed higher level in leaves (range 3.011 to 3.620 mg/g dry wt.) than stem (range 1.988 to 2.612 mg/g dry wt.), root (range 0.970 to 1.109 mg/g dry wt.) and seeds (2.067 mg/g dry wt.).

Keywords: Phenol; Tannin; Ascorbic acid; Senna tora

Introduction

A restorative plant is any plant in which at least one of its organs contains substances that can be utilized for remedial purposes on which are antecedents for the blend of helpful medications. Therapeutic plants contain organically dynamic mixture of substances (photochemical, for example, saponins, tannins, fundamental oils, flavonoids, alkaloids and other synthetic mixes, which have remedial and preventive properties. These unpredictable mixture of substances of various pieces are found as Secondary plant metabolites in at least one of these plants and are helpful for humankind [1]. In view of many diseases defiling drugs, health practices are now changing from curative to preventive medicine. Phytochemicals popular in preventive medicine are flavonoids, polyphenols, saponins, lignoids and vitamins.

Medicinal plants are still invaluable source of safe, less toxic, lower price, available and reliable natural resources of drugs all over the world. Plants are utilized therapeutically in various nations and are a wellspring of numerous strong and great medications [1]. Plants are an imperative piece of our regular eating routine; their

constituents and wholesome esteem has been seriously contemplated for quite a long time. In addition to essential primary metabolites (e.g., carbohydrate, lipid, protein and amino acids), higher plants are also able to synthesize a wide variety of low molecular weight compounds, the secondary metabolites [2].

Senna tora is one of the wild herbs which is outstanding for its therapeutic properties. Different bioactive mixes present in stem, roots, seeds, leaves and in addition its units this specific plant. *Senna tora* has indicated gigantic applications in both conventional and present day medicinal practices. It contains a portion of the valuable bioactive mixes like anthraquinone glycosides, phenolic mixes, myricyl liquor, steroids, flavonoids and so forth. The pharmacological profile uncovers it to be for its great enemy of oxidant movement, against microbial action, hostile to diabetic action, mitigating action, safe stimulatory exercises, hepatoprotective action, hostile to tumor action, anthelmintic action and so on.

The leaf extract of *Senna tora* plant is reported to have cardio protective activity in myocardial injury [Error!

Reference source not found.] The antibacterial activity of leaf extracts on various human pathogens were reported by Bhalodia et al. [3]. The in vitro anthelmintic activity of *Cassia tora* was reported by Deore et al. [6]. The antifungal activity of leaf extract was reported Mukherjee et al. [6]. The anti-arthritic activity of *Senna tora* plant parts was reported by Baleker et al [7]. The antidiabetic activity of *Senna tora* leaf was reported by Chaurasia et al. [8]. The anticancer properties of *Senna tora* leaves have reported by Rejiva et al. [9].

Materials and Methods

Total Phenols: The convergence of aggregate phenols in the plant extricate was controlled by utilizing Folin strategy [10]. Catechol was utilized as standard. 0.2 ml ethanolic (80%) extract (4 mg/ml) of plants and 0.2 ml Folin reagent were mixed thoroughly. After 4 min, 1 ml of 15% sodium carbonate was added and the mixture was allowed to stand for 2 hours at room temperature. The absorbance was measured at 760 nm. The convergence of aggregate phenols was estimated identical to catechol (as a standard medication) by utilizing standard adjustment bend of catechol.

Total Tannin: Total tannin in plant extract was determined by Folin-Denis method [11]. 0.5 g of powdered medication was bubbled for 30 min with 75 ml of twofold refined water. It was cooled, centrifuged at 2000 rpm for 20 min and supernatant was gathered in 100 ml volumetric flagon and the volume was made up with twofold refined water. 1 ml of this arrangement was exchanged to a 100 ml volumetric cup containing 75 ml water and 5 ml of Folin-Denis reagent+10 ml of sodium carbonate arrangement were added and weakened up to 100 ml with water.

In the wake of shaking, the absorbance was perused at 700 nm after 30 min. Clear arrangement was set up with water rather than the example. Standard graph was prepared by using 0-100 µg of tannic acid. Add up to tannin substance of the example was estimated identical to tannic corrosive by standard chart.

Ascorbic Acid: Add up to ascorbic corrosive substance in plant remove was controlled by Sadasivam and Balasubraminan method [12]. 2 g dried powdered example was separated with 4% oxalic corrosive and the volume was made up to 100 ml. It was centrifuged at 1000 rpm for 10 min. 5 ml supernatant fluid was exchanged to a cone shaped carafe and 10 ml of 4% oxalic corrosive was included. It was titrated against standard colour arrangement (2, 6-dichlorophenolindophenol) to a pink end-point. The

technique was rehashed with a clear arrangement (without including test). 5 ml ascorbic corrosive of 100 ppm was utilized as standard. Ascorbic acid content was calculated using the formula.

Results and Discussion

The phenol content of leaves was higher (6.408 mg/g dry wt.) in summer over than winter (6.102 mg/g dry wt.) and monsoon (5.740 mg/g dry wt.). The range of phenol content of stem was from (3.768 mg/g dry wt. to 4.419 mg/g dry wt.). The range of phenol content in root was from 1.284 mg/g dry wt. to 1.828 mg/g dry wt. and show higher in summer [7].

The phenol content of root was very low in all season. The phenol content of seeds was higher (3.873 mg/g dry wt.) as compared to leaves, stem and roots of all seasons. The phenol content showed increasing order of root<stem<leaves<seeds (Figure 1 and Table 1).

The tannin content of leaves was (0.470 mg/g dry wt.) in summer, (0.383 mg/g dry wt.) in winter and (0.410 mg/g dry wt.) in monsoon, higher being observed during summer i.e. (0.470 mg/g dry wt.). The range of tannin content in stem (0.300 mg/g dry wt. to 0.356 mg/g dry wt.). Maximum concentration of tannin was noted during summer (0.356 mg/g dry wt.) [3].

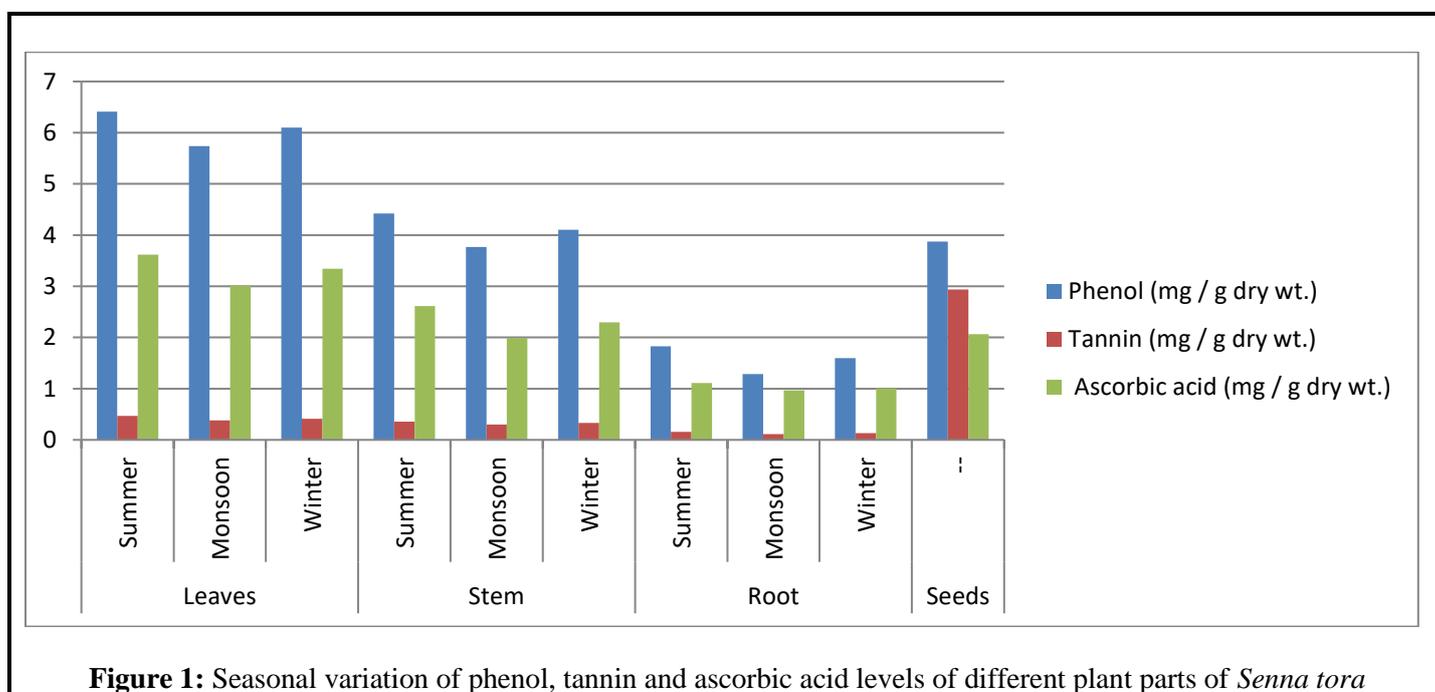
The range of tannin content of root was low from (0.112 mg/g dry wt. to 0.156). The tannin content of seeds was higher (2.940 mg/g dry wt.) as compared to leaves, stem and roots of all seasons. Generally, the concentration of tannin was found to be in increasing order of root<stem<leaves<seeds (Figure 1 and Table 1) [**Error! Reference source not found.**].

The ascorbic acid concentration of leaves was higher in summer (3.620 mg/g dry wt.) over that of monsoon (3.011 mg/g dry wt.) and winter (3.345 mg/g dry wt.). The stem of ascorbic acid concentration was ranging from (1.988 mg/g dry wt. to mg/g dry wt.) and significantly higher in summer (2.612 mg/g dry wt.).

The ascorbic acid content of root was comparatively low (0.970 mg/g to 1.109 mg/g). Seeds content lowest (2.067mg/g dry wt.) amount of ascorbic acid content compared to leaves of all seasons (Table 1 and Figure 1).

Table 1: Seasonal variation of phenol, tannin and ascorbic acid levels of different plant parts of *Senna tora*.

S. No.	Plant part	Season	Phenol (mg/g dry wt.)	Tannin (mg/g dry wt.)	Ascorbic acid (mg/g dry wt.)
1	Leaves	Summer	6.408	0.470	3.620
		Monsoon	5.740	0.383	3.011
		Winter	6.102	0.410	3.345
2	Stem	Summer	4.419	0.356	2.612
		Monsoon	3.768	0.300	1.988
		Winter	4.102	0.329	2.294
3	Root	Summer	1.828	0.156	1.109
		Monsoon	1.284	0.112	0.970
		Winter	1.596	0.134	1.003
4	Seeds	--	3.873	2.940	2.067



Conflict of Interest

None declared.

Funding

None declared.

References

1. Srivastava J, Lambert J, Vietmeyer N. Medicinal plants: Anexpanding role in development. *World Bank Tech Paper* 1996; 320.
2. Kadam VB, Bhagwat MG, Gaikwad VB. Determination of alkaloids, amino acids and protein

- content in leaves of ten medicinal plants of Laling forest, Dhule district (Maharashtra). *World J Pharm Res* 2015; 4: 2355-2361.
3. Chavan RT, Deshmukh VL, Kadam AS. Antibacterial activity of *Cassia tora* leaves. *Recent Res Sci Technol* 2011; 3: 12-14.
4. Bhalodia NR, Shukla VJ. Antibacterial and antifungal activities from leaf extracts of *Cassia fistula* 1: An ethnomedicinal plant. *J Adv Pharm Technol Res* 2011; 2: 104.
5. Deore SL, SKhadabadi SS, Kamdi KS, et al. In vitro Anthelmintic activity of *Cassia tora*. *Int J Chemtech Res* 2009: 177-179.
6. Mukherjee PK, Saha K, Sinha BP, et al. Antifungal activities of the leaf extract of *Cassia tora* Linn.

- (Fam. Leguminosae). *Phytother Res* 1996; 10: 521-522.
7. Balekar N, Pasi AK, Parihar G, et al. Antiarthritic activity of hydroalcoholic seed extract of *Cassia tora* Linn. *Topclass J of Herbal Med* 1985; 2: 254-260.
 8. Chaurasia B, Singh R, Dhakar DVK, et al. Preliminary Pytochemical and Pharmacological (Antidiabetic) screening of *Cassia tora* Linn: *Int J Pharm Life Sci* 2011; 2: 759- 766.
 9. Rejiya CS, Cibin TR, Abraham A. Leaves of *Cassia tora* as a novel cancer therapeutic: An *in vitro* study. *Toxicol In vitro* 2009; 23: 1-4.
 10. Malick C.P, Singh M.B. New Delhi: Kalyani Publisher; *Plant Enzymology and Histo Enzymology* 1980; 286.
 11. Schanderi SH. New York: Academic Press; 1970. *Method in food analysis*.
 12. Sadasivam S, Balasubraminan T. Tamil Nadu: Agricultural University. Coimbatore; *Practical manual in biochemistry* 1987; 14.
-

This manuscript was peer-reviewed

Mode of Review: Single-blinded

Academic Editor: Dr. Bijay Kumar Mohanty