International Journal for Modern Trends in Science and Technology, 6(12): 45-49, 2020

ISSN: 2455-3778 online
DOI: https://doi.org/10.46501/IJMTST061209
Available online at: http://www.ijmtst.com/vol6issue12.html

Assessment of Chemical Properties of *Tinospora Cordifolia*

Nafeesa Begum [1] | Ranjith Y [2]

[1]Assistant Professor, Department of Botany, Sahyadri Science College, Shivamogga
[2]Lecturer, Department of Botany, Sahyadri Science College, Shivamogga,

To Cite this Article
Nafeesa Begum and Ranjith Y, "Assessment of Chemical Properties of *Tinospora Cordifolia*", *International Journal for Modern Trends in Science and Technology*, 6(12): 45-49, 2020.

Article Info
Received on 07-November-2020, Revised on 22-November-2020, Accepted on 28-November-2020, Published on 01-December-2020.

ABSTRACT

The plant produces have phyto medicine this can be derived from bark, leaf, flower, fruit and seeds (Raghunathan and Rama Mitra, 1982). In the present study the phyto chemical analysis were carried out in leaf and bark of Tinosporacordifolia. Tinosporacordifolia is an important medicinal plant used in ayurvedic system of medicine. The stem of the plant is grayish brown in colour and bitter in taste. The stem is soft wooded, dry. The plant has been used as an anti spasmodic, anti inflammatory, Jaundice, Diabetes, seminal weakness, urinary tract infections, fever, skin diseases and expectorant, carminative, digestive, anti stress and aphrodisiac.

KEYWORDS: *Tinospora cordifolia, Phytochemicals, Chikka magalore District,*

I. INTRODUCTION

Then importance of plant is known to us well, the plant kingdom is a treasure house of potential drug and from the plant are easily available less expensive safe and efficient rarely have side effect. About most of the people use traditional medicine which as compound derived from medicinal plant. However such plant should be investigated better understand their properties, the medicinal plant action on human body and these bioactive substances includes synthesized by primary or rather secondary metabolism of living organisms. The plant produces have phyto medicine this can be derived from bark, leaf, flower, fruit and seeds (Raghunathan and Rama Mitra, 1982). In the present study the phyto chemical analysis were carried out in leaf and bark of Tinosporacordifolia. Tinosporacordifolia is an important medicinal plant used in ayurvedic system of medicine. The stem of the plant is grayish brown in colour and bitter in taste. The stem is soft wooded, dry. The plant has been used as an anti spasmodic, anti inflammatory, Jaundice, Diabetes, seminal weakness, urinary tract infections, fever, skin diseases and expectorant, carminative, digestive, anti stress and aphrodisiac. Piles problems can be controlled by eating this plant mixed with milk or water and thus preventing the bleeding and constipation (Kirtikar et.al. 1987) Leaves are rich in protein, calcium and phosphorous (Singh and Singh 2003; Sinha et.al., 2004).The alcoholic extract caused reduction in fasating blood sugar which has been interpreted as indicating some indirect action of drug on carbohydrates metabolism (Sinha et.al. 2004). Decoction of Tinosporacordifolia showed anti- inflammatory activity, paste or juice of this plant is applied locally for burning sensation (Sinhaet.al., 2004). Tinosporacordifolia the killing ability of

macrophages, the immune cells responsible for fighting invaders (Meena et.al. 2009).

II. Methodology

Collection of Samples

Fresh leaves and stem part of the Tinosporacordifolia were collected from Kallaththigiri, Chikkamagalore District. The plant was taxonomically identified and authenticated by the Department of Botany, Bengaluru North University, Tamaka, Kolar. The leaves and stem of the plant were shade dried until all the moisture content evaporated and plant materials became well dried for grinding. After drying, the plant materials were ground well using blender into powder and transferred into sterilized airtight container for the further analysis.

Preparation of plant extracts

Crude plant extract was prepared by soxhlet extraction method. About 20gm of powdered plant material was uniformly packed and extracted with 250ml of different solvents separately. Solvents used were ethanol. The process of extraction continues till the solvent in siphon tube of an extractor become colorless. After that the extract was taken in a beaker and heated at 300 to 400 C till all the solvent got evaporated. Dried extract was kept for the future use in phytochemical analysis

Quantitative chemical analysis

Determinations of total sugars

One gm of plant extracts were dissolved in 25ml of distilled water and 4ml of anthrone reagent, prepared in ice cold H2SO4 was added, incubated for 10mins in boiling water bath and absorbance was measured at 630nm. A standard curve was prepared by using glucose (Hedge et.al., 1962).

Determination of reducing sugars

The reducing sugar content of plant extract were determined calorimetrically by using 3, 5, - Dinitro salicylic acid (Lindsay, 1973). One gram of honey sample was dissolved with 25ml of water. For 1ml of sample, 3ml of DNS reagent and 1ml of potassium sodium tartrate (40%) was added and incubated for 5mins in water bath. The absorbance was measured at 510nm. Glucose was used as standard for calibration curve.

Determination of non- reducing sugars

The non –reducing sugar was estimated as the difference between the total sugar and reducing sugar content on subtraction (Shahnawazet.al., 2013).

Total sugars – Reducing sugars = Non -reducing sugars

Determination of total proteins

Total protein content of plant extract were determined according to Lowry et al., (1951). One gm of honey sample was diluted with 5ml of distilled water, to which 5ml of copper reagent was added and incubated for 10mins. Later 0.5ml of Folin's reagent was added and incubated again at room temperature for 30mins. The absorbance was measured at 660nm. Bovine Serum Albumin was used to prepare the standard curve.

Determination of total alkaloids

The total alkaloid content in plant extract was measured (Shubharani and Sivaram 2012). One ml of honey solution was mixed with 1ml of ferric chloride and 1ml of phenonthroline. The volume was then increased to 10ml by the addition distilled water. The mixture was allowed to stand for 30mins in water bath. The absorbance was measured at 510nm. Colchicine was used as Standard for calibration curve.

Determination of vitamin C

The estimation of vitamin C was carried out by a colorimetric method (Shubharani and Sivaram 2012). To 1ml of plant extract, 205ml of oxalic acid (4%), 0.5ml of sulphuric acid (5%), 2ml of ammonium molybdate and 3ml of distilled water was added, the extract was incubated in water bath with the temperature maintained at 600C. The resulting solution was cooled and measured at 515nm. The calibration curve was plotted using a freshly prepared solution of ascorbic acid.

Determination of total phenol

The total phenol concentration in plant extract was determined by using Folin- Ciocalteu method (Singleton et. al., 1999). One gm of honey sample was diluted with 10ml of distilled water and filtered. Then 0.5ml of this solution was mixed with 1ml of 0.2N Folin- Ciocalteu reagent and 1.5ml of 0.7M sodium carbonate solution and adjusted to 10ml with distilled water. After incubation in dark at 250C for 1 hour, the absorbency of reaction mixture was measured at 725nm. Gallic acid was used as standard to produce the calibration curve.

III. RESULTS

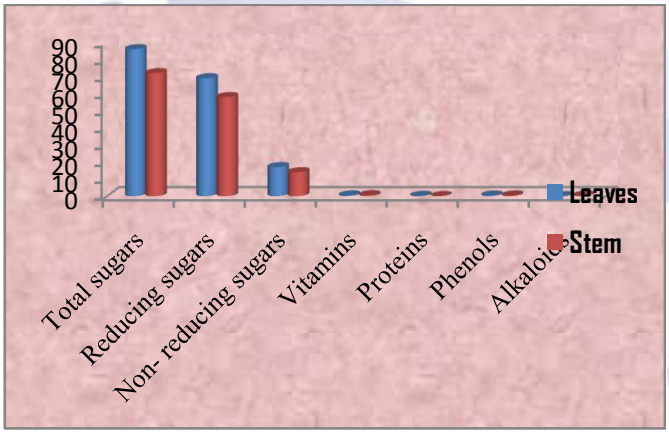
The alcoholic extract of Tinosporacordifolia was subjected to chemical analysis to determine the quality and medicinal importance of the plant. The details of result are presented in the below table.

Table: Chemical constituents of *Tinosporacordifolia*

Sample	Total sugars %	Reducing sugars %	Non- reducing sugars %	Vitamins (mg/gm)	Proteins (mg/gm)	Phenols (mg/gm)	Alkaloids (mg/gm)
Leaves	**86**	**69**	**17**	**0.50**	**0.2**	**0.4**	**0.0**
Stem	**72**	**58**	**14**	**0.59**	**0.1**	**0.42**	**0.3**

Phytochemical analysis conducted on the plant extracts revealed the presence of constituents which are known to exhibit medicinal as well as physiological activities (Sofowra 1993). This study revealed the presence of phytochemicals such as phenols, carbohydrates, vitamins, proteins and alkaloids. Carbohydrates are the main constituents of the plants in this study the total sugars of the leaf extract shows more content (86%) and stem consist less (72%).Concerning the reducing and non- reducing sugars leaf extract contains 69% and 17%, the stem contains 58% and 14% respectively. Vitamins and proteins are the primary metabolites and essential components in the plants in the *Tinosporacordifolia* vitamins C content in the leaf i.e. 0.50mg/gm and in stem 0.59mg/gm. The stem of the *Tinosporacordifolia* exhibits the higher content of the vitamin C. Proteins of the leaf (0.2mg/gm) was high and stem (0.1mg/gm) was low. Alkaloids showed much variance in the contents in the stem (0.3mg/gm) and the alkaloid *Tinosporacordifolia.*

Fig: Chemical constituents of *Tinosporacordifolia*



IV. DISCUSSION

The phenolic compounds are one of the largest and most ubiquitous groups of plant metabolites (Singh, R et.al., 2007). Several studies have described the antioxidant properties of medicinal plants which are rich in phenolic compounds (Brown and Rice Evans 1998; Krings and Berger 2001). Several studies confirmed the presence of chemical constituents contribute medicinal and physiological properties of the plant. Therefore, extracts from this plant is source of good useful drugs and recommended strongly for this plant and further work should be carried out on this *Tinosporacordifolia.*

REFERENCES

[1] Brown J.E. and Rice –Evans C.A. (1998). Luteclin rich artichoke extract protects low density lipoprotein from oxidation in vitro. Free Radical Research., 29: 247-255.

[2] Hedge J.E., Hofreiter B.T., Whistler R.L., Miller B.E. and JB, editors. (1962). Carbohydrate chemistry. - Academic Press New York, USA.

[3] KirtikarK.R. ,Basu B.D. (1987). Indian medicinal plants vol !1. International Book Distributors, Dehradun, India. 77-80.

[4] KringsU., and Berger R.G. (2001). Antioxidant activity of roasted foods. Food Chemistry, 72:223-229.

[5] Lindsay H. (1973). A colorimetric estimation of reducing sugar in potatoes with 3-5, dinitrosalicylic acid. - Potatoes Research, 16(3): 176-179.

[6] Lowry O.H., Rosebrough N.J., Farr A.L. and Randall R.J.(1951). Protein measurement with the Folin phenol reagent.- Journal of Biology and Chemistry, 193: 265-275.

[7] Meena A.K., Bansal P and Sanjivkumar (2009). Plants herbal wealth as a potential source of Ayurvedic drugs, Asian journal of traditional medicines, 4(4): 152-170.

[8] Priyanka Mishra, PreyaJamdar, Sharav Desai, Dhara Patel and DhananjayMeshram (2014). Phytochemical analysis and assessment of in vitro antibacterial activity of Tinosporacordifolia.International journal of current microbiology and applied sciences 3: 224-234

[9] Raghunathan K. Mittra R. 1982. Pharmocognosy of Indigenous Drugs. New Dehli: Central Council for Research in Ayurveda and Siddh.

[10] Shahnawaz M, Saghir Ahmed Sheikh, MirzaHussain, Abdul Razaq and Sadat Sher Khan. (2013). Study on the determination of physicochemical properties of honey from different valleys of Gilgit-Baltistan. - International Journal of Agricultural Science Research, 2(2):49-53

[11] Shubharani R. and Sivaram V. (2012). Physico chemical and pollen analysis of Western Ghats honey of Karnataka, South India. – International Journal of Science and Nature, 3(4):831-835.

[12] Singh R., Singh S.K., and Arora S. (2007). Evaluation of antioxidant potential of ethyl acetate extract/fractions of Acacia auriculiformis A. Cunn. Food Chemistry. Toxicology., 45:1216-1223.

[13] Singh, R., Singh S.K., Arora, S. (2007). Evaluation of antioxidant potential of potential of ethyl acetate extract/fractions of Acacia auriculiformis A. Cunn Food Chemistry. Toxicology., 45:1216-1223.
[14] Singleton V.L., Orthofer R. and Lamuela R.R.M. (1999). Analysis of total phenols and other oxidation substrates and antioxidants by means of Folin-Ciocalteu reagent.- Methods Enzymol. 299: 152-178.
[15] Sinha K., Mishra N.P. Singh J. Khanej G SPS (2004). Tinosporacordifolia is a reservoir plant for therapeutic applications: a review Indian journal of traditional knowledge 2: 257-270.
[16] Sofowra, A. (1993). Medicinal plants and traditional Medicine in Africa. Spectrum books Ltd., Ibadan, Nigeria, pp. 191-289.