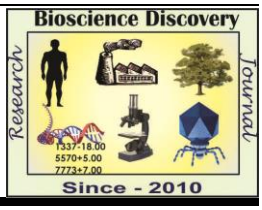
Bioscience Discovery, 10(4):168-170, Oct. - 2019

Print & Online, Open Access, Research Journal Available on http://jbsd.in
ISSN: 2229-3469 (Print); ISSN: 2231-024X (Online)

Research Article



Studies on Production And Total Phenol Content [TPC] of Root And Leaf of the Medicinal Plants

Gangasagar P. Y.

Dept. of Botany,
S.G.B. Mahavidayalay, Purna (M.S)
pygangasagar@gmail.com

Article Info

Received: 01-07-2019,
Revised: 19-09-2019,
Accepted: 26-09-2019

Keywords:
Biomass, *Folin –Ciocalteu reagent* , Medicinal plants, Total Phenol Content, Root & Leaf.

Abstract

The present study was designed for the total phenol content leaf and root .This study involving quantative determine of phenolic content using folin-Ciocalteu method. Plants have been a extemplary source of medicinal, ayurveda ,traditional , triable medicine and other Indian literatures mention the uses of plants in the treatments of various human ailments . This plants is having great potential to cure the diseases like diabetes, cholesterol, diarrhohea, antibacterial, antifungal,and many more .The medicinal plants contain free radicals molecules such as phenols ,flavonoids ,vitamins, terpenoids that are rich antioxidant activity. The objective of present work production and evaluation of TPC of crude extract was measured by established *Folin –Ciocalteau* regent method .The Total Phenol varied from Root &Leaf extract .The maximum Phenolic content was found in the alcoholic extract of *Datur metel* (*L).* of root , *Semecarpus anacardium (L).* of leaf. Considering these facts attempt was made to study total phenol content (TPC).

INTRODUCTION

Herbal plants have effective style and source of traditional and modern healthcare. *Agele marmelos (L)* is spiritual religious and medicinal plant native of India, Bangladesh and spread throughout south East Asia, these plants is having great potential to cure the diseases like diabetes, cholesterol ,inflammation, diarrhea, antibacterial, antifungal, antioxidant& many more(Sharma *et al*., 2011). *Datura metel (L.)*is considered as medicinal plants worldwide locally it is used as traditional medicine due to its medicinal value. In ayurvedic medicine, seeds of many different alkaloids are found in the whole plant **(**Rajadurai *et al.*, 2016). It is well known for its insecticidal herbicidal, anti fungal, antibacterial and also rich in alkolidal compound.(khaton *et al*., 2012). *Semecarpus anacardium Linn*. has been used in various ailments since ancient times in cough, asthma indigestion, ulcer piles and various nerves diseases. Its nuts contain a variety of biologically active compound such as Phenolic compounds,minerals,vitamins and amino acid. (Rajesh k. *et al*., 2018).*Vitex negundo* medicinal plant contain a wide variety of free radical ,scavenging molecules such as phenols, flavonoids, vitamins, terpenoids that are rich in antioxidant activity. Vitex negundo are used as medicine for treatment of eye disease toothache , inflammation, skin ulcers, rheumatoid arthritis & bronchitis(K. Prasanna *et al*., 2015). *Helicteres isora* (L) a South Asian plants is a rich source of medicinal and antioxidant compounds and has been widely used in traditional medicine. Antioxidants are important to neutralize damaging free radicals in the body (Sunny *et al*., 2017) . In India medicinal plants contain free radicals molecules such as phenols ,flavonoids ,vitamins, terpenoids that are rich antioxidant activity .Hence in the present investigation an attempt has been made a evaluate medicinal use of plant in traditional system

for variety of purposes and evaluate total phenol content of in plants. The basis aims of the research were to determine the total phenol content from the tested medicinal plants has been studied.

MATERIALS AND METHODS:

1) Plant materials:

The different plants parts (root, stem, and leaves) were collected from the field of Nanded. The plants was identified and authenticated in the department of Botany Yeshwant College Nanded. The plant part were washed with water remove dust, dried under shade at room temperature and ground to fine powder by employing an electrical grinder and stored in air tight containers.

2) Determination of total Phenol content:

Total phenol content was determined colorimeterically using *Folin-Ciocalteu* method as described by Mahadeven and Sridhar in (1196).For this 1ml of the alcoholic extract of biomass of the test medicinal plant was taken in a graduated test tube. 1ml of *Folin-Ciocalteu* reagent and 2ml of sodium carbonate ($Na_2 CO_3$) solution was added to the test tube, the test tube was well shaken and heated in a boiling water bath for exactly one minute. The test tube was cooled under running tap water .The blue colored solution in the test tube was diluted to 25ml with water and the absorbance was measured at 650nm in a colorimeter .The unknown were read from standard curve made from different concentration of alcohol. A blank containing all the reagents minus alcoholic extract of biomass of the test tube absorbance to zero.

3) Preparation of alcoholic extract of Biomass of medical plants:

For this the biomass of the test medicinal plants was cut into pieces of 1-2cms immediately plunged them in boiling ethyl alcohol and allowed to boil for ten minutes. 10ml of alcohol was used for every gm tissues. The extraction was made on top of a hot plate under a hood. The extraction was cooled in a pan of cold water. The tissues of the biomass were crushed thoroughly in a mortal pestle and pass thoroughly two layers of cheese cloth and re-extracted the ground tissues for three minutes in boiling 80 % alcohol using 3ml of alcohol for every gm of tissue. This second extraction ensures complete removal of alcohol soluble substances. The extract were cooled and filtered through what man No.41 filter paper .The volume was raised with 80 % alcohol to represent 10ml of extract was used. This extract was used as alcohol extract of the biomass of the test medicinal plants.

Table: Studies on production and total phenol content (TPC) of root and leaf biomass of the Medicinal plants.

S.N	BOTANICAL NAME	BIOMASS		TOTALPHENOL COTENT (MG/GM)	
		Root	Leaf	Root	Leaf
1	*Agele marmelos(L) corr.*	63	38	1.5	1.8
2	*Datura metel L.*	39	31	1.6	2.0
3	*Helicteres isora l.*	45	25	1.5	1.9
4	*Semecarpus anacardium L.*	49	32	1.1	2.1
5	*Vitex negundo L.*	52	30	0.1	0.2

It is clear from the results presented in table that the medicinal plants *Aegle marmelos (L.)* produce more leaf biomass and *Helicteres isore (L)* produce very less leaf biomass compared to the other selected medicinal plants. The medicinal plants *Aegle marmelos (L.)* produce more Root biomass and *Datura metel L.* produce very less Root biomass compared to the other selected medicinal plants

It is also evident from the result that Root biomass of *Datura metel L* showed more TPC (1.6 mg /gm) and Root Biomass of *Vitex nugundo L*. showed very less TPC (0.1mg /gm). The medicinal plants leaf biomass *Semecarpus ancardium* showed more TPC (2.1 mg /gm) and leaf biomass of *Vitex negundo* L. Showed very less TPC (0.2mg/gm) as compared to the test of medicinal plants.

Conclusion:

Aegel marmelos produce more root biomass (63gm/ 100mg) and *Datura metel* produce very less biomass(39mg/gm) as compared to the other .The root biomass *Datura metel* showed more TPC (1.6mg /gm) and *Vitex nugundo* L. Showed very less TPC (0.1mg /gm) as compared to the other test medicinal plants.

REFERENCES

Anshu W, Gupta M,Malik SA,Gupta S,2016. Antioxidant potential &phenolic content of leaf , bark & Fruit of *Aegle marmelos*. *J. of Tropical forest Sci*. **28**(3):268-274.

Bhandari MR and Kawabata J, 2004. Organic acid, phenolic content and antioxidant activity of wild yam (*Dioscorea spp*.) tables of Nepal. *Food, chem.* **88**(2):163-168.

John Staughton (BFA), 2017. Nine Amazing Benefits *of Datura*. *https:// www.orgaicfacts. net. Project.org*. 2 Jully,2019.

Jain A Sinha P & Desai N, 2014. Content and Antioxidant potential of Indian Screw tree *(Helicteres Isora((L*.) *Inter. Journ. of pharm. Sci. & Research* **5** (4)1320-1330.

Jain P, Sharma HP, 2013. A Potential ethnomedicinal plant : *Semecarpus anacardium Linn*-A Review. *J. of Research in Phar. and Chem.* **3**(3):564 -572.

Khaton MM, Shaik MM ,**2012 .**Review on *Datara metel*: A potential medicinal plant :*GJRMI,* **1** (4):123-132.

K Prasanna & V. Karthikeyan, 2015 Preliminary Phytochemical , TPC & Flavonoids content analysis of *Vitex negundo* & *Calatropics gigantea* leaf ethanolic extract. *Jocpr* **7**(4) 282-285.

Li XC, Jacob MR, Pasco DS, Eisohly HN,Nimrode AC, Walker LA and Clark AM 2002: Phenolic compound from Miconia myriantha inhibiting of candida aspartic proteases. *Jour. Natural product*. **64**(10):1282-1285.

Maurya S & Singh D, 2010. Quantitative Analysis of TPC in *Adathoda vasica* Nees Extracts. *Intern. Journal of pharm. Tech Research*. **2**(4): 2403-2406.

Patel PK,Sahu J,Narendra K, Prajapati B, Duey 2012. *Aegel marmelos* : A Review on its Medicinal Properties. 1**(5):** 332-341.

Pendekar PA,Venkataraman B, **2013**. Assesment of *Semcarpus anacardium* (L.) Leaf methanolic extract for their antibacterial, antifungal and antioxidant activity.*Phamacognostic research.* **5 (1):**170-174.

Pathak D and Srivastrava MP, 2000 :Effect of fungicide, plant extracts and biocontrol agents on total phenol content of sunflower plants. *Annuals of Biology* **16**(2):227-229.

Rajadurai P, Ramiah S, 2016.Total Phenolic content of Leaf, stem Root and flower of *Datura metel*.Inter. Postgraduate *Resear. Confrn. Univst. of Kelaniya* .IPRC/**16**/138.

Rami E and Patel I 2015. Quantitative Analysis of total phenols & flavonoids in vivo & in vitro sample of oroxylum indicum (L.) vent.*Asian Jrnl.of Pharma& Clincl. Reserch. **8**(2):4125.*

Sathya k,Tamil S, Rajamar B , IIakkiya KR and Prabakar M: Evaluation of phenolic contant antioxidant activity of *Aegle marmelos*. at *www, scholars reasea. libr. Com,* **3**(4):24-28.

Saklan S, Mishra AP and Rasulsularia HA 2000. Comparitave evolution of polyphenol content and antioxidant activity between ethanol extract of *Vitex negundo* and *Vitex trifolia L,* leaves by different methods. *Environmental engineering* **XXII (LVIII)):209-214**

Semalty M, Semalty A &Rawat MSM, 2000, *Semecarpus anacardium linn***,** A review *Pharmacogn Rev*. 4(7): 88–94. doi: 10.4103/0973-7847.65328

Sharma S, Bhargava S and Mehta A,**2017.** A study on TPC and flavonoid countant of *Helicteres isora* in different solvent. *World Journ. of pharma. Sic. vol.* **6***(8), 1471-1476.*

SharmaGN, Dubey SK, Sati N, Snadya J, **2011.** Phytochemical screening and estimation of total phenol content in *Aegel marmelos* seeds. *International Journal of Pharmaceutical and Clinical Research* 3(2):*27-29.*

Wani WR and khan SH. **2017** Estimation of sum phytoconstituent and evolution of antioxidant activity in *Aegle Marmelos* leaves extract. *Journal of Pharmacognosy and Phytochemistry,* **6**(1): 37-40.

How to cite this article

Gangasagar P. Y. , 2019. Studies on Production And Total Phenol Content [TPC] of Root And Leaf of the Medicinal Plants. *Bioscience Discovery*, **10**(4):168-170.