International Journal of Recent Trends in Science And Technology, P-ISSN 2277-2812 E-ISSN 2249-8109
Special Issue, ACAEE: 2018 pp 493-495

Research Article

Phytochemical analysis for total phenolic content of the medicinal plant solanum nigrum l

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Abstract

Medicinal plants besides therapeutic agents are also a big source of information for a wide variety of chemical constituents which could be developed as drugs with precise selectivity. This study was intended to evaluate the total phenolic content of the plant Solanum nigrum L.

Key Word: Medicinal plant, Solanum nigrum L., drugs, phenolic.

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Accessed Date: 26 March 2018

INTRODUCTION

Medicinal plants have been used as remedies for human diseases for centuries. The reason for using them as medicine lies in the fact that they contain chemical components of therapeutic value Nostro *et al.*, 2000. The medicinal value of plants lies in some chemical substances usually secondary metabolites that produce a definite physiological action on the human body. The most important of these bioactive compounds of plants are alkaloids, tannins and phenolics (Edeoga *et al.*, 2005).

MATERIALS AND METHODS

The plant *Solanum nigrum* L. was collected and washed thoroughly under running tap water and then rinsed in distilled water and allowed to dry for some time. Then the plant was shade dried without any contamination for about 3 to 4 weeks. The powder was extracted according to Rashmi *et al.*, 2010. The dried plant was powdered (coarse) and subjected to Soxhlet appratus using ethy[1] acetate and chloroform respectively. Almost all the chlorophyll and lipid is deposited on the side of the flask and was removed carefully. The extraction was done with each solvent until the supernatant in the Soxhlet became transparent for 36 hours. Every time before taking the solvents of higher polarity to remove the traces of previous solvents, exhausted marc was completely dried.

All the extracts were filtered, dried and weighed**.**

Collection and Extraction of plant material

In the present investigation the whole plant of *Solanum nigrum* L. was collected from the local surrounding at Bhopal district of (M.P) during the months of October-November, 2012. A voucher specimen was submitted in the herbarium at the P.G. Department, Unique College, Bhopal, M.P, India, where it was authenticated by Dr. Jagrati Tripathi, Professor and head department of biotechnology and a herbarium number 280 was assigned to it. The specimen was kept in the herbarium of the said department for future references.

Systematic position of plant

Kingdom	Plantae
Division	Angiospermae
Class	Dicotyledoneae
Order	Tubeflorae
Sub order	Solanales
Family	Solanaceae
Genera	*Solanum*
Species	*nigrum.*

Figure: Showing *Solanum nigrum L*

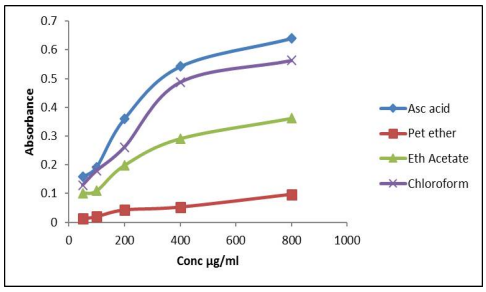
Determination of Total Phenolic Content (TPC)

The amount of total phenolic in extracts was determined with the Folin Ciocalteu reagent Dewanto *et al*., 2002. Galic acid was used as a standard and the total phenolic were expressed as mg/g gallic acid equivalent (GAE). Concentration of 0.01, 0.02, 0.03, 0.04 and 0.05 mg/ml of gallic acid were prepared in methanol. Concentration of 0.1and 1mg/ml of plant extract were also prepared in Chloroform and 0.5ml of each sample were introduced in to test and mixed with 2.5ml of a 10 fold dilute Folin Ciocalteu reagent and 2ml of 7.5% sodium carbonate. The tubes were covered with parafilm and allowed to stand for 30 minutes at room temperature before the absorbance was read at 760 nm spectrometrically. All determination was performed in triplicate. The Folin-Ciocalteu reagent is sensitive to reducing compounds including polyphenols. They produce a blue colour upon reaction. This blue colour was measured spectrophotometrically.

RESULTS

Table1: Comparison of reducing power assay of ascorbic acid and three extracts of *Solanum nigrum* L.

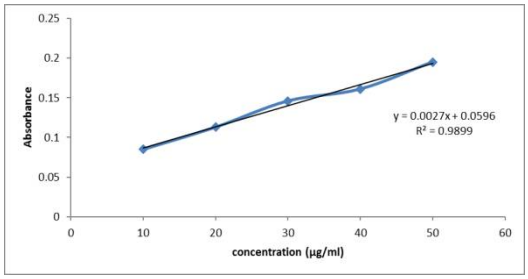
		Absorbance			
S. No	Conc.(µg/ml)	Ascorbic acid	Pet ether	Ethyl acetate	Chloroform
01	50	0.158±0.010	0.012±0.041	0.101±0.121	0.129±0.091
02	100	0.192±0.016	0.020±0.040	0.109±0.302	0.199±0.123
03	200	0.360±0.011	0.043±0.003	0.198±0.012	0.302±0.310
04	400	0.542±0.021	0.053±0.019	0.291±0.051	0.487±0.012
05	800	0.640±0.013	0.097±0.020	0.362±0.022	0.632±0.010



Graph 1: Representing Comparison of reducing ability of ascorbic acid and three extracts of *Solanum nigrum* L.

Table 2: Standard Curve of Gallic acid. Total Phenolic Content (TPC) of *Solanum nigrum* L

S. No	Concentration (ug/ml)	Absorbance
1	10	0.085
2	20	0.113
3	30	0.146
4	40	0.161
5	50	0.195



Graph 2: Representing absorbance of different extracts of *Solanum nigrum* L

Table 3: Showing the absorbance of different extracts of *Solanum nigrum* L.

Extract	Absorbance
Ethyl acetate	0.062
Chloroform	0.136

For estimation of total phenolic content TPC, gallic acid was used as standard phenolic content Table. Line of regression using standard curve of gallic acid was used to estimate total phenolic content in extracts. It was found that ethyl acetate and chloroform extract of Solanum nigrum L were having 0.89 µg/100 µg gallic acid equivalent and 27.92 µg/100 µg gallic acid equivalent respectively (Table).These results confirmed that ethyl acetate and chloroform extract were having rich content of phenols.

CONCLUSION

Phytochemical screenings of the extracts were investigated according to the standard procedures. The crude extract of Solanum nigrum L. were investigated to preliminary phytochemical screening which showed the presence of various phyto-constituents i.e., alkaloids, terpenoids, phenols, carbohydrates, saponins, minoacides etc in the crude extract of Solanum nigrum L. These results confirmed that ethyl acetate and chloroform extract were having rich content of phenols**.**

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Source of Support: None Declared
Conflict of Interest: None Declared