



PHYTOCHEMICAL INVESTIGATION OF DIFFERENT EXTRACTS OF WITHANIA SOMNIFERA ROOT

Mahesh A. Pawar

Department of Chemistry Shri Shivaji Science and Arts College, Chikhli, Dist-Buldana (MS)

Abstract

The present article deals with study of phytochemical analysis of *Withania somnifera*. *Withania somnifera* also known as ashwagandha is a source of naturally active compounds used by people worldwide for many ailments. *Withania somnifera* is a well known Indian medicinal plant widely used in the treatment of many clinical conditions in India. Root of *Withania somnifera* which has various therapeutic actions such as a sedative, diuretic, anti-inflammatory, and an anti-stress agent. The current investigation deals with extraction and detection or screening of active phytochemical compounds from different extracts of *Withania somnifera* root. Phytochemical screening of different extractions revealed the presence of phenols, flavonoids, tannins, saponins, alkaloids, steroids, terpenoids, glycosides.

Keywords: *Withania somnifera*, therapeutic, Phytochemical Screening

Introduction

Plants have been playing important role in curing the diseases of human being since time immemorial. The medicinal value of plants is due to some chemically active substances that produce a definite physiological action on the human body. Some important bioactive constituents of plants are alkaloids, tannins and flavonoid and phenolic compounds [1]. These compounds are synthesized by primary or rather secondary metabolism of living organisms. Secondary metabolites are chemically and taxonomically extremely diverse compounds with obscure function. They are widely used in the human therapy, agriculture, scientific research, veterinary and many other areas

[2]. Plants are used medicinally in different countries and are the source of potential and powerful drugs [3]. Plant synthesizes different types of chemical compounds, which can be differentiated on the basis of their chemical class, functional groups and bio synthetic origin into primary and secondary metabolites [4]

Withania somnifera is popularly known as Ashwagandha or Winter Cherry and Indian ginseng is considered one of the most important herbs in Ayurvedic indigenous medical systems for over 3000 years and is commonly used in Indian traditional health care systems[5]. It is a perennial plant belonging to the order Solanaceae [6]. It is mostly cultivated in many regions of India like Madhya Pradesh, Punjab, Gujarat and Rajasthan

Materials and Methods:

Plant Material Collection

Plant materials of *Withania somnifera* were collected from Ambabarwa forest area of Buldana district as per the standard method [7]. The plant was identified and authenticated by Dr. Miss V. U. Pochhi, Head, Department of Botany, Shri Shivaji Science and Arts College Chikhli. Fresh rhizomes were collected then brought to the laboratory and thoroughly washed with distilled water and shade dried at $28 \pm 2^\circ\text{C}$. The dried roots were ground well into a fine powder in a mixer grinder. The powder was stored in a polythene bags at room temperatures.

Preparation of the extract

The powder plant material was subjected to hot continuous extraction in a soxhlet apparatus. The powder plant drug was successively extracted with methanol, Acetone, chloroform, Ethyl acetate and hot water. The liquid extracts

were collected in tarred conical flask. The solvent was removed by distillation. These extracts were used to study to various qualitative chemical tests and determine the presence of different phytoconstituents.

Preliminary Phytochemical Screening

Phytochemical screening of the *Withania somnifera* was done by the standard procedures prescribed by Kokate and Harborne [8, 9].

Result and Discussion:

Phytochemical analysis was performed on the hot water, methanol acetone chloroform and

ethyl acetate extract of *Withania somnifera*. Hot water extract was found to contain proteins, amino acids, alkaloids, phenolic compounds, glycoside, and carbohydrate. Methanolic extract contains carbohydrates, glycosides, alkaloids, flavonoids, saponins Acetone extract contain steroid carbohydrate, protein ,glucoside .chloroform extract contain carbohydrate glucoside and ethyl acetate extract contain alkaloids, phenolic, compounds carbohydrate, protein. (Table1.) This work is beneficial for analyzing the quality and purity of the crude drug.

Sr. No.	Test	Hot water	Methanol	Acetone	Chloroform	Ethyl Acetate
I	Alkaloids					
	Mayer's Te	+	+	-	-	+
II	Flavonoids					
	Lead acetate test	-	+			
III	Phenolic compound and Tannins					
	FeCl ₃ test	+	+	-	-	+
IV	Terpenoids					
	Liebermann Burchards Test	-	-	-	-	-
V	Steroids					
	salkowski test	+	+	+	-	-
VI	Carbohydrates					
	Fehling's Test	+	+	+	+	+
VII	Protein					
	Millon's Test	+	+	+	-	+
VIII	Saponins					
	Foam Test	+	+	-	-	-
IX	Glucosides					
1	Keller-Killian test	+	+	+	+	-
2	Legal's test	+	+	+	+	-

Where, + = present and - = absent

Conclusion

The phytochemical investigation revealed the presence of various phytochemical constituents such as alkaloids, flavonoids, amino acids, carbohydrate, proteins, saponin and tannins. Phytochemical constituents confirmed

utilization of root for therapeutic medical treatment. The people of India are turning to usage of medicinal plants and phyto-chemicals in health care. Ayurveda, Unani, Siddha and other traditional systems of medicine are the ancient systems of medicine and utilize

numerous numbers of medicinal plants. All studied standardization parameters like phytochemical screening provide the knowledge in the identification authentication of *Withania somnifera*.

Reference

- [1] Aiyealaagbe, O. O. and Paul M. Osamudiamen (2009) Phytochemical screening for active compounds in *Mangifera indica* leaves from Ibadan,Oyo State. Plant science Research; 2(1):11-13.
- [2] Vasu, K., Goud, J.V., Suryam, A., Singara, Chary, M.A. 2009.Biomolecular and phytochemical analyses of three aquatic angiosperms. A fr. J. Microbiol. Res., 3(8):418-421.)
- [3] Srivastava, J., J.Lambert and N.Vietmeyer(1996). Medicinal plants: World Bank Technical Paper, 320: 20-27.
- [4] Mojab, F., M.Kamalinejad, N. Ghaderi and H.R. Vanidipour (2003).Phytochemicals screening of some species of Iranian plants.Iran. J. Pharm. Res., 3: 77-82.
- [5].Singh Brijendra Kr., Gahoi Rajat , Sonkar Anuj , A quality assessment and phytochemical screening of selected region of *Withania somnifera* Dunal,International Journal of pharmaceutical sciences and research,1(7),2010,73-77.
- [6].Singh G. , Sharma P. K., Dudhe R. ,Singh S., Biological activities of *Withania somnifera*,Annals of Biological Research, , 1 (3),2010,56-63.
- [7]Jain, S.K. and R.R. Rao (1977).A Handbook of Field and Herbarium Methods. Today and Tomorrow's Printers and Publishers, New Delhi
- [8]Kokate, C. K. (1994). Practical Pharmacognosy, 4thedn.VallabhPrakan, New Delhi, 179-181.
- [9]Harbone, J.B and B. L. Turner (1984).Plant chemosystematics.Academic press, London.pp: 61-62.