PHYSICO-CHEMICAL AND PHYTO-CHEMICAL EVALUTION OF SOYMIDA FEBRIFUGA (ROXB A .JUSS) USED BY HERBAL HEALERS FOR LIVESTOCK

Dr.Vanita U.Pochhi,
Shri Shivaji Science and Arts College Chikhli, Distt.Buldana

Abstract

Ancient man had discovered natural products to satisfy his needs including relief from his personal ailments as well as his fellow domestic animals. Ethno-veterinary medicine consists of local people's knowledge dealing with folk beliefs, skills, methods and practices pertaining to animal health care and production. This knowledge is based on close observation of animals or the oral transmission of experience from one generation to the next. Soymida febrifuga (Roxb A .Juss) is belonging to the family Meliaceae is one of ethnomedicinal plant used in Veterinary medicines. This selected medicinal plant is taxonomically identified and authenticated with standard flora .The plant drug is subjected for Physico-chemical and preliminary Phytochemical analysis. The phyto-chemical screening of ethnomedicinal plant showed the presence of alkaloids, flavonoids, terpenoids, saponins, Tanning, phenolic compounds and reducing sugars.

The finding provided evidence that crude aqueous and organic solvent extracts of Soymida febrifuga contain medicinally important bioactive compounds and it justifies their use for the treatment of different therapeutics.

Keywords: physico-chemical and phytochemical analysis.

Introduction

Since ancient times, plants have been indispensable sources of both preventive and curative traditional medicine preparations for human beings and live stock. Both Ayurvedic and Unani systems are still practiced in Indian villages. There were attempts by experienced veterinary practitioners, lacking formal training, to train candidates in the Indigenous system of veterinary medicine during the second half of the 19th century and at the beginning of 20th century but the attempts met with failure consequent on the ushering in of modern veterinary education in the British system. There has been a rich tradition and indigenous knowledge about animal health care in India. In rural areas remedies based on locally available herbs and animal product are still prevalence. The local people and researchers face the challenging task of not only documenting knowledge on plants but also applying the results of their studies to Biodiversity Conservation and Community development.The plant may be considered a biosynthetic laboratory, not only for the chemical compounds such as carbohydrates, proteins and lipids that are utilized us food by human being and animals but also for a multitude of compounds like glycosides alkaloids, volatile oils, tannins etc. that exert a physiologic effect. The systematic Study of a crude drug embraces through consideration of both primary and secondary metabolites derived as a result of plant metabolism.The current research is undertaken to carry out qualitative and quantitative phytochemical analysis.

Material and Method:

Collection and Identification:

The voucher specimen of Ethno-medicinal plants, Soymida febrifuga was collected and identified appropriately by consulting a floral expert. The plant was mounted on paper and the sample was taxonomically identified with the help of standard flora of Buldana district. The collected plant material was subjected for

separating desirable part from the main plant. The information revealed by herbal Practitioners was noted down.

Plate - I Phytochemical analysis

Fig. No. 1 *Soymida febrifuga* (Roxb.) A. Juss.

Fig. No. 2 *Soymida febrifuga* (Roxb.) A. Juss.(Bark)

Traditional use :

The stem bark powder mixed with boiled rice given for 4 or 5 days in lameness of legs. Leaves are boiled and warmth of that leaves applied on fractured part of animals. Stem bark powder mixed with whey given against dysentery.

Physico-Chemical Analysis:

The plant drug was subjected to analyze various physico-chemical characteristic features based on WHO guidelines (Anonymous-2007).The extract of Ethno-medicinal plant drug was analyzed qualitatively for the detection of Ash value, acid insoluble, water soluble Ash, alcohol soluble extractive.

Phyto-Chemical Analysis of EMP and TMF:

The extracts from ethno-medicinal plant drugs and Tribal Medicine Formulation were used for the Phyto-chemical analysis, qualitatively for the detection of carbohydrates, proteins, also for the secondary metabolites like alkaloids, flavonoids, terpenoids, steroids, tannins, saponins and total phenols etc. The aqueous extracts of the plants was subjected to qualitative chemical screening for the identification of the alkaloids, flavonoids and tannins using standard procedures.

Test for Alkaloids:

This was analyzed by following the procedure described by Trease and Evans, 1996. Alkaloids are basic nitrogenous compound with definite physiological and pharmacological activity. The alcoholic extract was evaporated to dryness and the residue was heated on a boiling water bath with 2% hydrochloric acid. After cooling, the mixture was filtered and treated with a few drops of Mayer's reagent. Turbidity or yellow precipitation in the samples indicates the presence of alkaloids in the extracts.

Test for Tannins:

Tannins were analyzed by following the procedures depicted by Iyengar et.al. 1995. The dried powdered samples (0.5g) of EMP was boiled in 20 ml of water in a test tube and then filtered. A few drops of 0.1 % ferric chloride was added to the filtrate. Development of brownish-green or blue-black color indicated the presence of tannins.

Test for Proteins:

An aliquot of 2ml filtrate was treated with 1drop of 2% copper sulphate solution.To this 1mlof ethanol was added followed by excess of potassium hydroxide pellets. Formation of pink colour in the ethanolic layer indicated the presence of protein.

Test for Phyto Sterols:

1ml of extract was dissolved in 10 ml of the chloroform and equal volume of concentrated H2SO4is carefully added by sides of the test tube. The upper layer turns red and sulphuric acid layer showed yellow with green

inflorescence. This indicated the presence of steroids (Siddiqui and Ali, 1997).

Test for Saponins:

Saponins were analyzed as per the standard protocol (Kalita et al.,2011). 1g of extract was boiled with 5 ml of distilled water and filtered. 3ml of distilled water was added to the filtrate, and the mixture was shaken vigorously for about 5 minutes. Frothing that persisted warming was taken as evidence of the presence of saponins; or the extract (50mg) is diluted with distilled water and made up to 20 ml. The suspension is shaken vigorously in a graduated cylinder for 15minutes; formation of emulsion indicates the presence of saponin or layer of foam indicated the presence of saponins.

Result and Discussion:

Table no.1

Physico-chemical parameters of Soymida febrifuga Stem bark powder

Sr. No.	Physico-chemical parameters	Soymida febrifuga
1	Loss on drying weight at 105C (% w/w)	17.90 %
2	Ash value at 450C (% w/w)	More than 3.5%
3	Acid insoluble Ash at 450C (%w/w)	5%
4	Water soluble extractive (% w/w)	18.40%
5	Alocohol soluble extractive (% w/w)	18.46%

Table 2: Qualitative chemical examination of various extracts.
(Obtained by successive solvent extraction of plant material)
MELIACEAE Present -- + Ve Absent -- - Ve

Soymida febrifuga.) (Roxb A .Juss.

Plant parts	Test	Reagent used	Petroleum ether extract (60 to 80^0) p	Benzene extract B	Chloroform extract C	Acetone extract A	Ethanol extract E	Water extract W
Stem Bark	Alkaloids	Mayer's Dragendorff's Hager's Wagener's	+ Ve	+ Ve	+ Ve	+ Ve	+ Ve	+ Ve
	Glycosides	Liebermann Burchard's Test/ Antheroquinen test	- Ve	- Ve	- Ve	- Ve	- Ve	- Ve
	Phytosterols	Liebermann's test	+ Ve	+ Ve	+ Ve	- Ve	- Ve	- Ve
	Saponins	Foam test	- Ve	- Ve	- Ve	+ Ve	+ Ve	+ Ve
	Phenolic compounds/ Tannins	Ferric chloride solution	- Ve	- Ve	- Ve	+ Ve	+ Ve	+ Ve
	Proteins	Biuret test/ Ninhydrin test	- Ve	- Ve	- Ve	- Ve	- Ve	- Ve

Discussion:

The presence of important Phyto-chemical make the plant useful for treating different ailments and have a potential of providing useful drugs for Livestock. The quantitative determination of Physico chemical parameters will help to setting standards for crude drug .The total ash is particularly important in evaluating the purity of drugs .The phytochemical screening including
Qualitative chemical observation is also observed. The curative properties of medicinal plants are perhaps due to the presence of various primary and secondary metabolites .Natural antioxidants mainly come from plants in the form of phenolic compounds such as flavonoids, phenolic acids etc (Ali et. al.2008) Tannins bind to proline rich protein and interfere with protein Synthesis. Taking into consideration all these facts and the 'Importance of Plant Uses' it is very necessary to save the plant and to undertake such studies before the knowledge is lost forever.

References

1. Anonymous (2001) The Ayurvedic pharmacopeia of india. Ministry of Health and Family welfare part vol I, vol II, Ed IP 46-47.

2.A.V. Kasture ,S.G.wadodkar K.R.Mahadik ,H.N.More ,Phamaceuticals analysis,Industrial methods vol.II, Nirali publication.

David F. Cutler,Ted Botha,Dennis Wm.Stevenson(2008).Plant anatomy; An Applied Approach.Wiley –BlackWell.

Fennel, C.W.and van Staden, J.2001.Crinum species in traditional and modern medicine.J Ethnobotanical.78:15-26

Kokate,C.K.(1994)Practical pharmacognosy.4th ed.Vallbh prakashn ,New Delhi,179-181.

Sharma, D. N. Animal Health Care In Ancient India.

Sharma, S. K. (1993). Traditional art of animals' treatment in Himachal Pradesh. Keynote Papers and Extended Abstracts, Congress on Traditional Sciences and Technologies of India, 28 Nov. - 3 Dec. 1993, IIT, Bombay. Knowledge Vol. 3 (4), pp. 397-406.

Ugemuge, N. R. (1986). Flora of Nagpur district. Sree Prakashan, Nagpur.

Venkatraman, V. (1941). Palapoodu "Vinca pusilla" poisoning in cattle. Indian Veterinary Journal 17 (4): 372-373.