The Study on Proximate Analysis of AmpelocissusLatifolia Root

[1]Deepika Patil,[2]Rama Lokhande,
[1]Assistant Professor,[2]Professor,
[1]Engineering Sciences and Humanities,
[1]Saraswati College of Engineering, Kharghar,Navi Mumbai, India
[2] Basic School of Sciences, Jaipur National University, Jaipur

---

***Abstract*—The need for development of quality control methods for the traditional herbal remedies is felt because the herbal raw material is a mixture of several phyto and physio-chemicals which can vary depending on the geographical location, cultivating practices and storage conditions. Therefore, it is necessary to standardize the raw material. The proximate analysis helps to access the quality of plant raw material as it gives definite values which is useful for the identification of plant. The present research work focuses on proximate analysis of roots of *Ampelocissus latifolia*.*Ampelocissus latifolia* is an herbaceous climber belonging to vitaceae familycommonly known as Ran draksha.Its leaves and roots are widely used as medicine by tribal people.**

***IndexTerms*—*Ampelocissus latifolia*, Proximate analysis, Standardization, Medicinal plants.**

I. INTRODUCTION

Plants are the best source to obtain variety of drugs, however they should be analyzed for their properties, safety and efficiency [1,2].It is known that about 80 % of population still uses traditional medicines [3]. There are many plants mention in ayurveda which are good resource of biological active molecule and also possess good potential of curing diseases. *Ampelocissuslatifolia*isone of the large herbaceous climber having tuberous roots and broad leaves [4]. It is used asmedicinal plant by tribal people in our country. The roots have been used as remedy against snake bites. In Bihar this plant is used for the treatment of fractured bones, fever and muscular pains [4,5]. Till now, the study has been done on the leaves of *Ampelocissus latifolia* but its roots are also used as medicine, hence the present research work deals with the study of proximate analysis of *Ampelocissus latifolia* roots. Proximate analysis denotes the nutritional value and organic content of the plant material [6]. The ash value indicates the total mineral content present in plants.Sulphated ash measures the amount of non-volatile impurities present in organic substance. Moisture content value is related to calorific value. Whereas,the acid insoluble ash signifies the quality as well as the purity of plant material [7].

II. METHOD AND MATERIAL

The roots of *Ampelocissus latifolia*were collected from the field area of Rasayani, Raigaddistrict, Maharashtra. The authentication of plant wasdone by the department of botany, St.Xavier's college, Mumbai. The specimenmatches with the Blatter herbarium specimennumber NYD 3379 of N.Y. Das. The plant material collected was washed, cleaned, dried and then grounded into fine powder. Thisroot powder was further subjected to the following proximate analysis parameters [8-12].

Foreign organic matter

The roots of *Ampelocissus latifolia* were washed thoroughly with water to remove dust particles on the surfaces. The cleaned plant material was spread on filter paper to drain the excess of water. Approximately 500 g of plant material was spread on clean white cloth. Foreign matter was removed by visual inspection by using magnifying lens (6X).

Extractable matter

Generally the extraction of natural product is done by conventional methods using soxhlet apparatus, solvent extraction methods or ultra sound, microwaves, or by using supercritical solvents [13]. Here, the root powder was weighed accurately 5 g and was placed separately in conical flasks. To each flask 100 cm^3 of ethanol was added. These flasks were shaken frequently for 6 hours and kept for 18 hours. The content of flask was filtered and the filtrate was transferred to the beakers which were weighed previously. Then the filtrate was evaporated to dryness on water bath at 70^0 C. The weight of extractable matter was noted and percentage extractable matter was calculated. The above procedure was repeated thrice for ethanol soluble extractable matter and thrice for the water soluble extractable matter.

Total ash

Total ash method is to measure the total amount of material remaining after the ignition. This includes both physiological ash and non-physiological ash.Accurately weighed 2g root powder was taken in silica dish and was ignited on burner for about 1 hr. The ignition was completed by keeping it in muffle furnace at 550^0 C till the grey ash was formed. Further it was kept in the desiccators and thenweighed.

Acid insoluble ash

Accurately weighed 2 g of root powder was taken in silica dish and was ignited on burner for about 1 hour. The ignition was completed by keeping it in muffle furnace at 550^0 C till the grey ash was formed. Then concentrated HCl was added in it and evaporated it to dryness and was kept in electric oven at 135^0 C for 3 hrs. After cooling, 25 cm^3 of dilute HCl was added and was heated on water bath for 10 minutes. This solution was cooled and filtered using Whatman filter paper no. 41. The residue was then washed with hot water to remove the chlorides. The filter paper was ignited in muffle furnace along with residue at 550 ^{0} C for 1 hour. Weight of ash was noted after cooling it in desiccators.

Water soluble ash

Water soluble ash is the difference in weight between the total ash and the residue after treatment of total ash with water. In the total ash 25 cm^3 of distilled water was added and boiled for 10 min. the insoluble matter was collected on ash less filter paper. This residue was washed with hot water and ignited in crucible for 15 min at temperature not more than 450^0C. The water soluble ash was calculated by subtracting the weight of this residue from the weight of total ash.

Sulphated ash

It is the residue of the inorganic sulphates obtained after treatment of substance with concentrate sulphuric acid, which decomposes and oxidizes the organic matter. 2 g of root powder was taken in silica dish and was ignited till the substance was completely charred. The residue was then moistened with 1 cm^3 of concentrated sulphuric acid. The crucible was heated gently till white fumes cease to evolve and then ignited at 800^0 C till the black precipitate disappeared. After this, crucible was cooled and weight was noted down.

Loss on drying

5 g of powdered sample was weighed separately in stoppered weighing bottles. The bottles were then placed with lid open in an air oven maintained at 100^0 C $\pm$ 2^0 C. The samples were kept in an oven for an hour. The bottles were then removed, covered and placed in desiccators. Then the weight of sample was noted down.

Moisture content

The Moisture percentage is determined by using Karl-Fischer titrimetric method. Exactly 100 mg of root powder was used for analysis. The titration was carried out three times and its mean was considered.

III. RESULT

Following are the obtained values for proximate analysis of *Ampelocissus latifolia* roots.

Parameters	**Percentage contents in sample**
Ampelocissus latifolia roots	
Foreign Organic matter	0.03 %
Ethanol Extractable matter	10.46 %
Water Extractable matter	19.16 %
Total ash	10.30 %
Acid insoluble ash	0.96 %
Water soluble ash	9.10 %
Sulphated ash	15.43 %
Loss on drying	11.26 %
Moisture content	9.65%

* Each value is mean of three readings.

IV. DISCUSSION

The roots powder of *Ampelocissus latifolia* was subjected to proximate analysis such as extractive values, total ash, sulphated ash, water soluble ash, acid soluble ash and moisture content. The results of proximate analysis can be used for determination of difference in qualities and can provide information to identify an adulteration. Ash value is useful in determining authenticity and purity of sample and also these values are important for qualitative standards. *Ampelocissus latifolia roots* shows higher total ash values which shows higher mineral content. Higher Values of water extractable matter is observed in the plants which may indicate that it is fully assimilated when taken with water, which is an effective solvent. A lower value of moisture content indicates roots of *Ampelocissus latifolia* have high calorific value.

V. CONCLUSION

The evaluation of physio chemical parameters of medicinal plants is very important in identifying new sources of herbal drugs.The present research will provide quality and purity of plant material and it will help to distinguish between the substitutes and adulterants present in plant material. From the study, it can be concluded that the results of proximate analysis of *Ampelocissus latifolia* root will provide finger print to determine whether the species of *Ampelocissus latifolia* roots are adulterated or not. This will help in the standardization of plant material.

REFERENCES

[1] S. Arunkumar, Muthuselvam, World J. Agril. Sci., vol.5,2009, pp. 572-576.

[2] R.N.S. Yadav and M. Agravala, Journal of Phytology, vol.3 2011, pp. 10-14

[3] S.K. Purna and M. Babu, "Collagen based dressing –a review," Burns, 26, 2000, pp. 54-62

[4] D.C.Patil, S.V.Tadaye, S.S.Mamidwar, "Study of Heavy Metals present in Ampelocissus latifolia leaves and roots," IJATES, vol.5, 2017, pp 186-189

[5] C.T.Tamilarsi, U Subasini, S. Kavimini, B. Jaykar, "Phytochemical and pharmacological Evaluation of Ampelocissus latifolia" Ancient Sci. Life, 2000,1-6.

[6] M. Angeline Christie Hannah, S. Krishnakumari, "Analysis of mineral elements, proximate and nutritive value in Citrullus vulgaris Schrad." The pharma Innovation Journal, vol. 4, 2015, pp 07-11

[7] Y. Rao, B. Xiang, "Determinatiojn of total ash and acid insoluble ash of Chinese herbal medicines Prunella spica by IR spectroscopy." The pharmaceutical society of Japan. 2009, pp. 881-886

[8] World health Organization. Quality control methods for medicinal plant materials. Geneva, WHO; 1998.

[9] The Ayurvedic Pharmacopoeia of India, New Delhi: Indian ministry of health and family welfare.1996, pp.53-55.

[10] Indian Herbal Pharmacopoeia, vol. II, A joint publication of regional research Laboratory (CSIR) Jammu Tawi and Indian Drugs Manufacturer's Association Mumbai, 1998.

[11] L D. Nair, S.K. Sar, A.Arora, D. Mahapatra, "A comparative study on proximate Analysis conducted on medicinal plants of Chattisgarh, India" Res. J. Chem. Sci., Vol. 2, 2012, pp. 18-21

[12] K.Prabhu, etal, A Comparative study on proximate analysis conducted on three Viburnum linn. Species, Der Pharmacia Sinica, vol. 2, 2011, pp.200-206.

[13] S. Tayade, D. Patil, "Solasodine Alkaloid extraction from leaves of Solanum Xanthocarpum" IJARSE, Vol. 6, 2017, pp. 223-230.