



Comparative Phytochemical Analysis of *Ampelocissus latifolia* Roots Using Various Solvents

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ABSTRACT: In our country many plants are known for their medicinal properties and are widely used for the treatment of various diseases. *Ampelocissus latifolia* is one of the ethnomedicinal plants belonging to vitaceae family. It is large herbaceous climber with circular, broad leaves and tuberous roots. *Ampelocissus latifolia* is commonly known as wild grapes and widely used by local communities to cure number of health problems. These therapeutic uses are due to presence of biologically active compounds present in plants which are termed as phytochemicals or phyto-constituents. The present study reveals the phytochemical analysis of roots extracts using various solvents like ethanol, methanol, ethyl acetate and pet-ether based on their polarity. The study includes comparison of phytochemicals present in extract which are obtained by using above solvents.

Keywords: Phytochemicals; *Ampelocissus latifolia*; soxhlets; ethanol; methanol; ethyl acetate and petroleum ether.

INTRODUCTION: Since ancient time medicinal plants played a very important role and have been used by man to cure many diseases. The Ayurvedic, Homeopathic, Unani & Siddha system of medicines are still prevailing predominantly use of plant based raw materials in most of their preparations and formulations. Phytochemicals are natural chemical constituent in the vegetables, plants, leaves, and roots that have defense mechanism. They may vary depending on the geographical location, cultivating practices and storage conditions and transportation can also affect the quality of finished formulation. *Ampelocissus latifolia* is one of the most widely used medicinal plant among tribal people. The sandals of Bihar used this plant for muscular pains, sores and fractured bones.^{1 & 2} The extracts of this root is useful in chronic dysentery.³ The roots of this plant are known to be used against snake bite.⁴ The present study emphasis on phytochemical present in *Ampelocissus latifolia* leaf obtained by using four different solvents. The selection of solvent is based on polarity like polar, mid polar and non-polar.

MATERIAL AND METHODS: The plant material, root powder of *Ampelocissus latifolia* was extracted separately in petroleum ether, ethyl acetate, methanol and ethanol solvents by using soxhlet extactor. These extracts were subjected to following tests to check presence of secondary metabolites.⁵⁻⁸

Test for saponins: 300 mg of individual extract was boiled with 5 cm³ water for two minutes, the mixture

was allowed to cooled and mixed vigorously. The froth formation indicates the saponins is present.

Test for tannins: To 100 mg of each extract, 2 cm³ of NaCl was added and then mixed with the 5 cm³ of 1 % gelatin solution. Formation of precipitate indicates tannins is present.

Test for Triterpenes: To the 100 mg of each extract, 5 cm³ of chloroform was added, and warmed for 30 min. In above solution few drops of concentrated H₂SO₄ was added. The red colour of solution indicates the presence of triterpenes.

Test for alkaloids: 100 mg of individual extract was digested using 2M HCl, this acidic filtrate was mixed with amyl alcohol at room temperature. The alcoholic layer turns pink in colour which suggests the presence of alkaloids.

Test for flavonoids: To the 100 mg of each extract, 1% aluminium chloride solution (prepared in methanol), 2 drops of concentrated hydrochloric acid, KOH and MgOH solutions were added. Pink-tomato red colour is obtained which concludes presence of flavonoids.

Test for steroids: 2 cm³ of acetic anhydride was added to 100 mg of each individual extract, further it was boiled and then cooled. To this solution, few drops of conc. H₂SO₄ were added from the sides of the test tube. The appearance of blue-green colour ring suggests the steroids are presence.

Test for cardiac glycosides: To one hundred mg of each extract 2 cm³ of acetic anhydride was added, it was then boiled and cooled. Then few drops of conc. H₂SO₄ were added to it through the sides of the test tube. The blue-green colour indicates the presence of cardiac glycosides.

RESULTS AND DISCUSSION:

Table 1: The results of preliminary phytochemical analysis.

Class of compounds	<i>Ampelocissus Latifolia</i> roots extract			
	Pet. ether	Ethyl Acetate	Ethanol	Methanol
Steroids	-	+	+	+
Alkaloids	-	-	+	+
Cardiac Glycosides	-	+	+	+
Flavonoids	-	-	+	+
Saponins	-	-	+	+
Triterpenes	-	+	+	+
Tannins	-	+	+	+
Carbohydrates	-	-	+	+
Phytosterols	-	-	+	+

(+) = present, (-) = absent

The result indicates that *Ampelocissus latifolia* root contains many phyto-constituents like steroids, alkaloids, glycosides, saponins, phytosterols and triterpenes. It is also observed that most of the phyto constituents are extracted in polar solvents comparative to non-polar solvents. They are responsible for various medicinal properties in plants. In plants, antioxidants naturally come in the form of phenolic compounds like phenolic acids, flavonoid, tocopherols etc.⁹ The function of saponins is to produce inhibitory action on inflammation.¹⁰ It has been reported that steroids also shows antibacterial properties.¹¹ Alkaloids are known to have medicinal uses for biological properties, which is their cytotoxicity.¹² It has been also reported to possess the analgesic activity,¹³ antispasmodic and antibacterial^{14,15} properties of alkaloids. Glycosides are known factor to reduce or lower the blood pressure.¹⁶

CONCLUSION: In present study it can be concluded that the methanolic and ethanolic leaf extracts shows presence of maximum phytochemicals like tannins,

steroids, saponins, triterpenes and glycosides in comparison to ethyl acetate and petroleum ether. The presence of above phytochemicals contribute medicinal properties to the plants therefore could be good source for useful drugs.

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