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Research Article

PRELIMINARY PHYTOCHEMICAL ANALYSIS AND TOTAL PHENOL CONTENT OF ASHWAGANDHA (WITHANIA SOMNIFERA) EXTRACT

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INTRODUCTION

Ashwagandha (Withania somnifera) also known as Winter cherry belongs to Solanaceae (Nightshade/Potato family). Withania somnifera is cultivated in many of the drier regions of India. It is also found in Nepal, China and Yemen. Nowadays it's being cultivated in some regions of South Africa and America, having mild climatic conditions. This herb is mostly used in Ayurvedic treatment and has its traditional roots of usage since then. The root of this plant is widely used for medicinal purposes. Not only roots, but its leaves and berries are also used for treating jaundice, by making decoction. This ancient Indian herbal plant has amazing healing properties that help us not only in treating various physical ailments but metal ailments such as stress, depression, restlessness, etc. Its medicinal properties are,

- Anti oxidative
- Anti bacterial
- Anti malarial
- Anti viral
- Anti cancerous
- Anti inflammatory
- Anti depressant
- Anti fertility
- Analgesic
- Cell rejuvenation
- Pain relieving

Ashwagandha is mostly used for treating patients having mental disorders such as stress, depression, etc. Thus it is widely used as as antidepressant. In ancient times, physicians recommended it to relieve muscular pains. Sometimes people use it for regulating anti fertility problems in men and women. Pregnant women are advised to take very minimal amount of withania somnifera as high dosages lead to damage of the foetus (ie. Teratogenecity)

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MATERIALS AND METHODS

Preparation of extract

The Ashwagandha (Withania somnifera) root is collected, washed well and air dried. A few days later, the root sample is powder well and stored in polythene bag for use. An aqueous extract of ash was prepared and used for the further analysis. The Ashwagandha extract is prepared by taking the powdered root sample into a test tube and adding distilled water to it such that the plant powder is soaked in well and shaken well. The solution is then filtered by using a filter paper and the filtrate is collected in a separate test tube. This is filtered extract is used for further photochemical analysis.

Phytochemical analysis

Phytochemical analysis was done with reference to Abdul Wadood, Mehrene Ghufran and Syed Barbar *et al* (1000144)

Test for Phlobatannins

The extract is taken and distilled water is added to it. Shake it well. Now filter it to collect the plant extract. Then add 1% of aqueous HCl to the Ashwagandha extract and boil it with the help of hot plate stirrer. Brownish red precipitate is obtained. Red colour precipitation indicates positive result of Phlobatannins.

COLOUR RATINGS: 4/5

Test for Reducing Sugars

The Ashwagandha extract is added to 5 ml of distilled water. Then 1 ml of ethanol is added and mixed. Next 1ml of Fehlings solution A and 1 ml of Fehlings solution B are added in the test tube. Heat it till it boils and pour it in aqueous ethanol solution. Greenish brown precipitation is observed. Any change in precipitation's colour indicates positive result of Reducing sugars.

COLOUR RATINGS: 3/5

Test for Terpenoids

The sample extract is added to 10 ml of methanol. It is shaken well and filtered by using filter paper. This filtrate is collected and 2 ml of chloroform is added. Now add 3 ml of sulphuric

acid to the Ashwagandha filtrate. Light brown precipitation is observed. Formation of reddish brown precipitation indicates positive test of Terpenoids.

COLOUR RATINGS: 2/5

Test for Flavonoids

The Ashwagandha extract is taken. 10 ml of distilled water, 5 ml of ammonium solution were added to a proportion of aqueous filtrate Ashwagandha extract, followed by the addition of 1 ml of concentrated sulphuric acid. Brownish yellow coloured precipitation is observed. Yellow colour precipitate indicates presence of Flavanoids.

COLOUR RATINGS: 1/5

Test for Alkaloids

Few amount of sample extract is taken and add 3 ml of hexane to it. Mix it, shake it well and filter it. Pour 5 ml of HCl it into the Ashwagandha filtrate containing hexane. Heat the mixture, filter it and add a few drops of picric acid to it. Light brown colour precipitation is observed. Formation of yellow colour precipitate indicates presence of Alkaloids.

COLOUR RATINGS: 1/5

Test for Total phenol

The total phenol content of Ashwagandha is found by using Folin Ciocalteu's reagent and expressed in terms of Gallic acid equivalent. The total phenolic content can be calculated as natural compound (gallic acid) equivalent (GAE) by the following equation: T= C XV/M where,

- T is the total phenolic content in mg·g–1 of the extracts as GAE,
- C is the concentration of gallic acid established from the calibration curve in mg·ml–1
- V is the volume of the extract solution in ml and M is the weight of the extract in g.

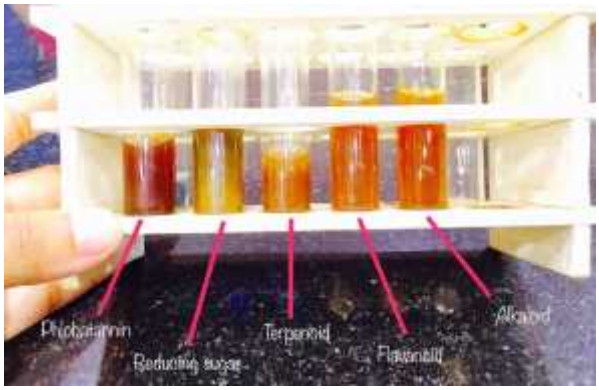
Gallic acid is used as a standard compound and the total phenols were expressed as mg/g gallic acid equivalent. The total phenolic content was found to be 70mg/1 g of Gallic acid equivalent.

RESULTS AND DISCUSSION

This study has revealed that presence of phytochemicals as active medicinal chemical constituents. Important medicinal phytochemicals like Phlobatannins, Reducing sugars, Terpenoids, Flavanoids and Alkaloids were also found in the Ashwagandha extract.

TEST	RESULT
Phlobatannins	+ + + +
Reducing sugars	+ + +
Terpenoids	+ +
Flavanoids	+
Alkaloids	+

From the results we have obtained, we can clearly see that Ashwagandha (Withania somnifera) is rich in Phlobatannins when compared to other important phytochemicals present in it. Phlobatannins have been reportedly known for their excellent wound healing properties that are anti inflammatory, analgesic and anti oxidative. Reducing sugars are the next most abundant phytochemicals found in Ashwagandha.



Since reducing sugars contain carbohydrates, glucose, etc we can also say that they play a vital role in controlling diabetes. Terpenoids are well known for their anti inflammatory, anti malarial, anti viral and anti bacterial properties. It is also very helpful in inhibition of cholesterol synthesis, thus helping in reducing fat depositions which in turn prevent heart related disorders and obesity. Flavanoids and Alkaloids are found in mild traces. Flavanoids greatly help out in preventing coronary diseases as per recent studies. Alkaloids are used for reducing headaches and fever. Thus we can also say that Alkaloids have analgesic and anti bacterial properties.

CONCLUSION

According to current studies we can say that Withania somnifera has many properties which help in the treatment of various human ailments. Widely well known for its healing properties to help in curing various psychological disorders like depression, mental illness, stress, insomnia, etc. From previous studies and our study, we have found out that this ancient Indian herb is rich in Phlobatannins. As we all know, Phlobatannins have high antioxidant properties that help in cell rejuvenation which in turn leads to better functioning of the organs and organ systems at cellular level. Thus we can say conclude that by using this amazing herb, we can heal nearly all ailments that are related physically and psychologically which will greatly help in benefiting not only that individual but also for the betterment of the society.

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