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Moringa oleifera Lam.: Preliminary Phytochemical Screening of Leaves in Five Different Extracts

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ABSTRACT: The purpose of this study was to evaluate the phytochemical screening of leaf in five different extracts of *Moringa oleifera* Lam. Phytochemical analysis of leaf in solvent of varying polarity viz., methanol, chloroform, ethanol, petroleum and aqueous were carried out. The phytochemical screening indicated the presence of phenolics, flavonoids, tannin, glycosides, saponin etc. in the extracts. The obtained result indicated that the methanolic extract showed high intensity of phytochemicals compared to other extract. These studies provide evidence to support traditional medicinal uses of the plant.

KEYWORDS: Moringa oleifera, Phytochemical, Tannin, Saponin, Flavonoids.

I. INTRODUCTION

In the age of globalization, drug of plant origin is gaining more attention compared to modern medicine. Therapeutic properties of plant are due to the presence of these phytochemicals. The phytochemicals are responsible for the colour and organoleptic properties in plant (Liu, 2004) having biological significance are not yet established as an essential nutrient for the plant (brow and Arthur, 2001). *Moringa oleifera* lam is one of the best known and most widely distributed and naturalized plant of monogeneric family moringaceae with 14 known species, of these only *Moringa oleifera* lam is the most widely known species. *Moringa* leaf contains phytochemical having potent anticancer and hypotensive activity and are considered full of medicinal properties and used in siddha medicine (Monica et al, 2010). In Ayurveda and siddha, leaves and roots are used as anthelmintic, to treat nausea, giddiness, tuberculosis etc. (Nadkarni, 1995, Oommen et al, 2000).

II. MATERIALS AND METHODS

Collection of leaves

The fresh plant materials were collected from the campus of DDU Gorakhpur university Gorakhpur. The leaves are initially separated from main plant body and rinsed with water and dehydrated. The dehydrated leaves were pulverized with the help of mechanical grinder and kept in sealed container.

Preparation of extracts

Soxhlet apparatus was used for extraction. 500 mg of dried powder sample weight and placed in organic solvent (methanol, chloroform, ethanol, petroleum and aqueous). After effective extraction solvents were concentrated using rotatory evaporator under reduced pressure. The crude extract was weighed and its percentage yield was determined.

Phytochemical analysis

The qualitative methods already established to test for classes of compounds in plant extracts by A.D. Talukadar et al., (2010) were used. The substances that were tested for alkaloids, steroids, tannins, reducing sugar, flavonoids, saponin and glycosides. The extracts of *Moringa oleifera* Lam leaves was treated with five different extracts used to determine the compound.

Test for Alkaloids

One milligram of dried extract was dissolved in 6 drops of 2% hydrochloric acid. The solution was divided into 3 aliquots; to the first portion which acted as a reference, 2 ml of distilled water was added. To the second test tube, 2 drops of Dragendorff's reagent whose Basic Bismuth nitrate, were added. A precipitate indicated presence of alkaloids.



To the third portion, 2 drops of Mayer's reagent was added and a yellowish white precipitate indicated the presence of alkaloids.

Test for Steroids

Two ml acetic anhydride was added to 0.5 g ethanolic extract with 2 ml sulphuric acid. The change of colour from violet to blue the presence of steroid.

Test for Tannins

One milligram of plant extracts was dissolved in 1.5 ml of water; 3 drop of dilute ferric chloride were added. A blackish blue colour indicated the presence of Gallic tannins and green blackish colour indicated catechol tannins.

Test for Saponins

Three drops of dimethylsulfoxide were added to 1 mg of plant extract, 5 ml of distilled water added and shaken. Presence of foam which persisted for more than 15 min indicated the presence of saponins.

Test for Glycosides

Small amount of extract was dissolved separately in 5 ml of distilled water and then filtered. Small portion of extract was hydrolysed with dilute hydrochloric acid for few hours in water bath and was subjected to Liebermann-Burchard's test to detect the presence of different glycosides. The pink to red colour indicated the presence of glycosides.

Test for Flavonoids

Five ml of dilute ammonia solution were added to a portion of aqueous filtrate of plant extract followed by the addition of concentrated sulphuric acid. A yellow coloration absorbed in extract indicated the presence of flavonoids.

Test for Reducing Sugars

One milligram of the extract dissolved in 2 ml of water and 1 ml of Fehling's reagent which contained a mixture of Fehling's solution I and II was added and the mixture heated. A brick red precipitate denoted the presence of reducing sugars.

III. RESULT AND DISCUSSION

The phytochemical analysis of leaves extract using Ethanol, Methanol, Chloroform., Petroleum and Aqueous was showed in Table-1. The phytochemical investigation revealed the presence of phytoconstituents such as alkaloids, tannin, saponin, reducing sugar, flavonoids and glycosides while absence of amino acids was reported from leaves in different extracts.

Result and Discussion

The present study revealed that the crude methanolic extract of *Moringa oleifera* Lam. leaves showed higher intensity of alkaloids, flavonoids, glycosides, saponins, tannins compared to ethanol, petroleum, chloroform extract. Alkaloids are naturally occurring chemical compounds containing basic nitrogen atoms. They often have pharmacological effects and are used as medications and recreational drugs (Korkina, 1997). Flavonoids enhance the effects of Vitamin C and function as antioxidants. They are also known to be biologically active against liver toxins, tumors, viruses and other microbes (Yamuna, 2011). Tannins have shown potential antiviral, antibacterial and antiparasitic effects. Saponins cause hemolysis of red blood cells (Winter et al., 1993).

Table-1: qualitative analysis of phytochemicals from *Moringa Oleifera* lam. leaves

Bioactive Constituents	MLE	ELE	PLE	CLE	ALE
Alkaloids	+++	-	-	++	-
Amino Acids	-	-	-	-	-
Flavonoids	+++	++	-	-	++
Glycosides	+++	+	++	-	++
Saponins	++	++	-	-	+
Tannins	+++	+	-	-	++
Reducing Sugar	++	-	-	-	-



MLE-Methanol leaf extract, ELE-Ethanol leaf extract, PLE- Petroleum leaf extract, CLE-Chloroform leaf extract, ALE- Aqueous leaf extract, +, ++, +++=Indicate the intensity of appearance.

IV. CONCLUSION

The result of this study shows that *Moringa oleifera* Lam. possess a number of phytochemicals. *Moringa oleifera* Lam. an important medicinal plant is one of the most widely cultivated species of the family *Moringaceae*. Pharmacologically reported that Different parts of it have been used for different human ailments. *Moringa oleifera* leaves are used to treat common medical conditions but a few uses it for preventing and treating malnutrition. Presence of phytochemicals indicates possible preventive and curative properties of *M. oleifera* leaves (Abalaka et al., 2012).

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