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Preliminary test of phytochemical screening of crude ethanolic and aqueous extract of *Moringa pterygosperma Gaertn*

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Abstract
The bioactive compounds present in the plant are responsible for the medicinal properties of the plant. The present investigation is aimed in screening the bioactive compounds present in the leaves, stem bark and flowers of *Moringa pterygosperma* an important ethnomedicinal plant. The qualitative analysis for the present phytochemicals was performed using ethanol and aqueous extracts of leaves, stem bark and flowers of *Moringa* plant by various standard techniques available. Phytochemical analysis revealed the presence of alkaloids, flavonoids, terpenoids, glycosides, steroids and phenols in all the extracts varying quantities. Since the plant contain high quantities of these new bioactive potential compounds, it is reliable to possess large number of pharmacological values like antioxidants, antifungal, antibacterial, anti abortifacient, anti-inflammatory, antiulcer, diuretics activities and are being employed for the treatment of different ailments in the indigenous system of medicine.

Keywords: *Moringa pterygosperma, ethanolic extract, Phytochemical Screening, antibacterial, antioxidant*

1. Introduction
The medicinal plants are useful for healing as well as for curing of human diseases because of the presence of phytochemical constituents [1]. Phytochemicals are naturally occurring in the medicinal plants leaves, stem bark, fruits and roots that have defense mechanism and protect from various diseases. Natural products from plants called secondary metabolites are the end products of primary metabolites such as carbohydrates, amino acid, and chlorophyll lipid so on. They are synthesis large variety of chemical substances known as secondary metabolites which include alkaloids, steroids, flavonoids, terpenoids, glycoside, saponia, tannins, phenolic compounds etc. [2] the active principle of many drugs found in plants are secondary metabolites. [3]. Therefor1e basic phytochemical investigation is vital. The identification and isolation of such active compounds makes it more effective therapeutic application. It present consumes from taking certain plants that have no medicinal value or poisonous to them. It will lead to better understanding of diseases

Moringa pterygosperma Gaertn (Moringaceae), native to the western and sub Himalayan region, India, Pakistan, Africa and Arabia is now distributed in the Philippines, Cambodia, Central North and Caribbean Island [4]. The *Moringa* tree is cultivated and uses a vegetable (leaves, green ponds, flower, roasted seed), for spice (roots), for cooking and cosmetic oil (seeds) and all plants organs are a medicinal properties. [5]. It has an impressive range of medicinal uses with high nutritional value. Different parts of these plants contain a profile of important minerals and are a good source of protein, vitamins, beta carotenes, amino acid and various phenolic compounds. its leaves have the calcium equivalent of four times that of milk, the vitamin C content is seven times that of orange while its potassium is three times that of bananas, three times the iron of spinach, four time, the amount of vitamin A carrots, and two time the protein in milk [6]. Beside, *Moringa* is also suggested as a viable supplement of dietary minerals.

Recently researchers have become convinced that the compounds derived from plants for instance, phenolic, flavonoids and antioxidants compounds, do more in preventing different disease. *Moringa* has been found to be a good source of poly phenols and antioxidants. The leaves of *Moringa pterygosperma* have various biological activities including anticancer activity, prevention of cardiovascular diseases, liver disease antimicrobial,

Anti-tumor, nervous disorder, anti-inflammation digestive disorders, skin disorders and regulation of thyroid status [7, 8, 9].

2. Material and methods

1. *Collection of plant material*

The fresh sample of leaves stem barks and flower of *Moringa pterygosperma* were collected from Deverikhund, Ballarpur (C.G.) India in Nov-Dec 2012 and identified by Prof. NK Singh, Department of Botany, Govt. E.R.R. Science P.G. College Bilaspur (C.G.). The different parts (leaves, stem bark and flowers) were air dried at room temperature followed by pulverization to powder from using a mortar and pestle. The powdered plants parts were subjected to aqueous and ethanol extraction.

2. *Preparation of plant extracts*

50 gram of the powdered plant samples (leaves, stem bark and flower) were weight separately in different beakers and percolated with 150 ml ethanol each of these beakers was proper sealed with aluminum foil and left for 72 hours. The solution was then filtered using a funnel filled in a filter paper and the extracts obtained. The extracts obtained were concentrated using rotary evaporator of 400C. The extracts were stored in a universal bottle and refrigerated of 40 C prior to use [10]. The above procedure was repeated on 50 g each of the powdered leaves, stem bark and flowers of the plants with the use of 150 ml of distilled water.

3. *Phytochemical Screening*

The preliminary Phytochemical analysis of the extracts carried out using aqueous and ethanolic extracts and on the powdered specimens using standard procedures to identify the various constituents described by Sofowora [11], Trease and Evans [12] and Harborne [13].

(1) *Test for tannins*

About 2 ml of the extract was stirred with 2ml of distilled water and few drops of ferric chloride (FeCl3) solution were added. Formation of green precipitate was indication of presence of tannins.

(2) *Test for Saponins*

5 ml of extract was shaken vigorously with 5 ml of distilled water in a test tube and warmed. The formation of stable foam was taken as an indication of the presence of saponins.

(3) *Test for Alkaloids*

3 ml of extract was stirred with 3 ml of 1% HCl on steam bath. 1 ml of mixture was taken separately in two test tubes. Few drops of Dragendorff's reagent were added in one tube and occurrence of orange red precipitated was taken as positive. Two the second tube Mayer's reagent was added and appearance of buff colored precipitate was taken as positive test for presence of alkaloids.

(4) *Test for flavonoids*

To 1 ml of extract, 1ml of 10% lead acetate solution was added. The formation of a yellow precipitate was taken as a positive test for presence of flavonoids.

(5) *Test for Terpenoids*

2 ml of the organic extract was dissolved in 2ml of CHCl3 and evaporated to dryness. 2ml of conc. H2SO4 was then added and heated for about 2 minutes. Development of a grayish color indicates the presence of terpenoids

(6) *Test for glycosides*

To 2 ml of extract with dilute HCl and 2 ml Sodium nitropruside in pyridine and sodium hydroxide solution were added. Formation of pink to blood red color indicates the presence of Cardiac glycosides.

(7) *Test for Steroids*

a. ***Salkowski,s test*** :- a red color produced in the lower chloroform layer when 2 ml of organic extract was dissolved in 2 ml of chloroform and 2 ml concentrated sulphuric acid was added in it, indicates the presence of steroids.
b. ***Liebermann Burchard test:*** - development of a greenish color when 2 ml of the organic extract was dissolved in 2 ml of chloroform and treated with concentrated sulphuric acid and acetic acid indicates the presence of steroids.

(8) *Test for phenols*

The extract (500mg) was dissolved in 5ml of distilled water. To this, few drops of neutral 5% ferric chloride solution were added. A dark green clour indicated the presence of phenolic compounds.

3. Results and discussion

The curative properties of *Moringa* plants are perhaps due to the presence of various secondary metabolites such as alkaloids, flavonoids, glycoside, phenols, saponins, steroids, tannins etc. The Phytochemical analysis of the ethanol and aqueous extract from the leaves, stem bark and flowers of the *Moringa pterygosperma* is shown in table 1 respectively.

Table 1: Phytochemical analysis of ethanol and aqueous extracts from leaves, stem bark and flower of *Moringa pterygosperma*

Phytochemical components	Ethanol extract			aqueous extract		
	Leaves	Stem bark	Flower	Leaves	Stem bark	Flower
Tannins	+	-	-	+	-	-
Saponins	+	-	-	+	-	-
Alkaloids	+	+	+	-	+	+
Flavonoids	-	+	+	-	+	-
Terpenoids	+	+	+	+	+	+
Glycoside	+	+	+	-	+	+
Steroids	+	+	+	+	+	-
Phenols	+	-	+	+	+	+

Table 1 indicated the different phytochemical components of *Moringa pterygosperma.* The ethanol extracts from leaves, stem bark and flower of *Moringa* plants contained a number of phytochemical such as alkaloids, flavonoids, glycoside, phenols, saponins, steroids and tannins. This data corroborated the findings of other authors where these compounds exhibited antimicrobials activities [14]. Tannins and saponins are present in leaves extracts but absent in stem bark and flower extracts. Flavonoids are present in stem bark and flower but absent in leaves. The presence of flavonoids indicates the natural occurring phenolic compound, with beneficial effects in the human diet as antioxidants and neutralizing free radicals [15]. Tannins are group of polymeric phenolic compound and cause local tumors. Terpenoids and steroids were detected in *Moringa pterygosperma* which were reported to be active against antibacterial activity [16]. Saponins have the properties of precipitating and coagulating red blood cells, anti-inflammatory [17]. Alkaloids are used in medicines for reducing headache he and fever. This are attributed for anti-bacterial and analgesic properties.

4. Conclusion

The *Moringa pterygosperma* plant is the source of the secondary metabolites i.e. alkaloid's, flavonoid's, terpenoids, steroid's, tannins, saponins and reducing sugars. Medicinal plant plays a vital role in preventing various diseases. The anti-diuretic, anti-inflammatory, antiviral, anti-bacterial, anti-analgesic, anti-oxidant, anti-abortifiecient of the various parts of plants is due to the presence of the above mentioned secondary metabolites. The phytochemical analysis of the plants is also important and pharmaceuticals companies for the novel drugs for treatment of various diseases. The present study provides evidence that solvent extract of *Moringa pterygosperma* contains medicinally important bioactive compounds and this justifies the use of plant species as traditional medicine for treatment of various diseases. Further purification, identification and characterization of the bio active chemical constituent's compounds would be our priority in future studies.

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