

Pharmacognostical aspects and phytochemical screening of powdered Rosa Centifolia petal

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Abstract: This study would be useful to complement the information regarding pharmacognostical characteristics, physicochemical evaluation, micrometric analysis, and phytochemical exploration in the Ayurvedic system of medicine for its identification and pharmacological use of herbal drug Rosa centifolia Petals. The flowers of Rosa centifolia were collected, authenticated and shade dried. Rosa centifolia petals were then undergone morphological, physicochemical exploration, micrometric investigation, and Phytochemical analysis. The dried Rosa centifolia Petals were then extracted with different solvents alcohol, ethyl acetate, and petroleum ether, and their extractive values were calculated. The secondary metabolites were found in ethanol and ethyl acetate extract of the crude drug. Thin Layer chromatography (TLC) was performed for important phytochemicals flavonoids and polyphenol of the ethanol, ethyl acetate, and petroleum ether extract. The Physicochemical evaluation of powder crude drug showed values for moisture content, ash values, swelling index, foreign matter, and extractive values which are within the limits of World Health Organization standards for the medicinal plants. Micromeritic analysis of rose petal powder discloses good flowability. The preliminary examination for the crude extract indicated the presence of carbohydrates, glycosides, alkaloids, flavonoids, and amino acids. TLC Rf values for flavonoid and phenolic were found to be for ethanolic extract 0.78 and 0.77, ethyl acetate extract 0.81 and 0.78, and petroleum ether extract 0.81 and 0.78 respectively. The current study was to explore the crude drug that would be useful to complement the information regarding pharmacognostical features, physicochemical determination, micrometric exploration for the standardization of Rosa centifolia Petals.

Keywords: Rosa centifolia, Macromorphological study, Physicochemical exploration, Phytochemical analysis, micrometric investigation, TLC screening.

I. INTRODUCTION

The worldwide occurrence of diabetes mellitus is rising in adults constitutes global public health trouble. It is predicted that India, China, and the United States will have the largest number of people with diabetes by 2030. Diabetes mellitus (DM) is the commonest endocrine disorder that affects more than 100 million people worldwide (6% population). By explanation, diabetes mellitus is categorized under metabolic disease and characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The huge mainstream of cases of diabetes falls into two etiopathogenetic categories. In one category, Diabetes mellitus has been classified into two types i.e. insulin-dependent diabetes mellitus (IDDM, Type I) and non-insulin-dependent diabetes mellitus (NIDDM, Type II). Type I diabetes is an autoimmune disease characterized by a local inflammatory reaction in and around islets that is followed by selective destruction of insulin-secreting cells whereas Type II diabetes is characterized by peripheral insulin resistance and impaired. It is found to damage many body systems particularly blood vessels, eyes, kidneys, heart, and nerves (1). The key components of type II diabetes are β -cell dysfunction causing impaired insulin secretion and increased need for insulin due to insulin resistance (Kamtekar et al., 2014). Metabolic changes caused by hyperglycemia are called diabetes mellitus and hyperglycemia. The most common hypoglycemic agents used globally such as metformin, sulfonylureas, and glucosidase inhibitors have severe adverse effects such as diabetic ketoacidosis, diarrhea, and a variety of diabetes complications. The unbeaten treatment and management of diabetes are yet to be exposed. Within the Indian subcontinent, extensive research has been performed in the ethnomedicine system to find out the possible uses of the plant as an anti-diabetic agent [2]. Animal models of diabetes are therefore greatly useful and advantageous in biomedical studies because they offer a promise of new insights into human diabetes. Most of the available models are based on rodents because of their small size, short generation interval, easy availability, and economic considerations (Singh & Pathak, 2015). Abundant studies have been also published on the antioxidant, antibacterial activities, and chemical composition of rose essential oil, in current years. However, no report on the antioxidant and anti-diabetic activities and total phenolic contents of Rosa centifolia is available to date, for our information. Rose essential oil is used in the perfumery and cosmetic industry, it has high market value because of its. Hydrosol and absolute are less expensive in comparison with rose oil. Consequently, the purpose of the present study was to investigate the antidiabetic properties of rose essential oil, which is used as raw material in various cosmetic and pharmaceutical applications [4].

Epidemiology

It is assessed that 366 million people suffering from DM in 2011; by 2030 this would have increased up to 552 million. The cases of type 2 DM is increasing in every country of people living in low- and middle-income countries mostly affected with DM about 80%. It is estimated that by the year 2030 439 million people would have type 2 DM. Due to variations in geographical region, environmental, and lifestyle risk factors, the incidence of type 2 DM differs substantially from one geographical region to the other.

It is predicted that in the next two decades the prevalence of DM in adults of which type 2 DM is becoming prominent will increase and the majority of patients are get affected aged between 45 and 64 years (Deshmukh & Jain, 2015; Olokoba et al., n.d.).

II. MATERIAL AND METHOD

Collection of Plant sample

The plant part flower petals of *Rosa centifolia* sample were collected from botanical garden Koni Bilaspur C.G. The samples were packed instantly in polyethylene bags to avoid decomposition of some bioactive compounds and environmental contamination. Botanical identification was performed by botanist Professor A. K. Dixit, Department of Botany.

Organoleptic evaluations

Organoleptic evaluations of the collected *Rosa centifolia* plant fresh flower petals were performed according to the color, size, odor, and taste parameters.

Macroscopic description

Macroscopic analysis of the plant was carried out according to the method of Evans. Flower petals were subjected to morphological characteristics such as shape, size, texture ("Pharmacognostic, Physicochemical Analysis and Phytochemical Screening of the Leaves of *W. Trilobata* L.," 2018).

Physicochemical evaluation

Physicochemical parameters evaluated for dried *Rosa centifolia* plant flower petals such as total ash, acid insoluble ash, water-soluble ash, alcohol extractive value, water extractive value, foreign matter, moisture content, pH, and soluble extractive values of *Rosa centifolia* petals were performed according to the official method prescribed and the WHO guidelines on quality control methods for medical plants Material (Fathima & Murthy, 2019; Mukhi et al., 2016).

Determination of foreign content

Weight Approximately 100 gm of Patel powder (Figure-1) of *Rosa centifolia* was taken and spread into a thin layer. The foreign matter was being distinguished by inspection with the unaided eye separated and weighed. The percentage of foreign content present in crude drugs was determined by using the formula given below [10].

$$\% \text{ foreign content} = \frac{(\text{Weight of sample} - \text{Weight of oreign matter}) \times 100}{\text{Weight of sample}}$$

Moisture content

The moist crude drug was weighed immediately after collection and recorded as 'wet weight of sample'. Using a hot air oven the wet sample was dried at a temperature not exceeding 115 C. The sample was set aside to be cooled and to be weighed again after 1 and 2 hr and was recorded as the 'dry weight of sample', sequentially. The amount of moisture was calculated using the formula given below [11].

$$\% \text{ moisture content} = \frac{(\text{Weight of sample} - \text{Weight of dried sample}) \times 100}{\text{Weight of sample}}$$

Sample preparation for ash content

Rosa centifolia flower petal undergoes determination for Water-soluble ash, acid insoluble ash, sulphated ash, and total ash by following the protocol of Indian Pharmacopoeia, 2007. For ash estimation of crude drug, a platinum crucible was heated to turn red for 10 min, kept in desiccators allowed to be cooled and to be weighed. Samples for different ash parameters were prepared as follows [11].

Determination of Ash value

Ash content in the investigated plant species *Rosa centifolia* was calculated by the methods given below:

Total ash

When the powdered drug is ignited at 7000°C white-colored ash is obtained. It contains inorganic salts in oxide form [12].

Determination of total ash

Five grams of the crushed plant material was taken in a silica crucible previously ignited and weighed. A fine even layer of the crushed plant material was then spread in on the bottom of the crucible. Then the material is incinerated in a muffle furnace by gradually increasing the heat not exceeding dull red heat until free from carbon and then cooled and weighed. If in this way we could not be obtained carbon-free ash, the overdone mass was exhausted with hot water. The residue was collected on an ashless filter paper which was then incinerated. The ash percentage was calculated with reference to the air-dried material.

$$\% \text{ Total ash value} = \frac{\text{Weight of ash} \times 100}{\text{Weight of drug}}$$

Water-soluble ash

Water-soluble ash contains inorganic salts which are soluble in water.

Determination of Water-Soluble Ash

100 mg of ash was boiled for five minutes with 10 ml of distilled water. The insoluble matter was collected in a silica crucible or on ashless filter paper. It was washed with hot water and then ignited to constant weight at low temperatures. The weight of the insoluble matter was subtracted from the weight of the ash. The percentage of water-soluble ash was calculated with reference to the amount of ash taken.

Acid Insoluble ash

It contains inorganic salts which are not soluble in water as well as in 10% hydrochloric acid example, salts of silicate, etc.

Determination of Acid Insoluble Ash

The total ash was boiled for five minutes with 25 ml of 10% HCl. The insoluble ash was collected in a silica crucible or ashless filter paper. It was washed with hot water and then ignited and weighed. The weight of the insoluble matter was subtracted from the weight of the ash. The difference in weight represents the acid-insoluble ash. The percentage of acid-insoluble ash was calculated with reference to the amount of ash taken.

Estimation of sulphated ash

A total of 1 g of the substance under examination was taken in the crucible and ignited gently in a place protected from air currents until the substance was thoroughly charred. The residue was mixed with 1 ml of sulphuric acid on cooling and moistening and heated gently until the white fumes were no longer evolved. It was ignited at (800 ± 25) C until all black particles disappeared. After allowing it to be cooled, a few drops of sulphuric acid were poured and ignited as before. After cooling and weighing of the crucible, the operation was repeated until two successive weights did not differ by more than 0.5 mg (A. U. Patel et al., 2018; Sharma et al., 2013).

Swelling index

Swelling Index and Foaming index were determined as per the methods prescribed in WHO guidelines (A. U. Patel et al., 2018; Sharma et al., 2013). Percentage swelling (swelling index) was calculated using the following formula:

$$\% \text{ Swelling index} = \frac{(\text{Wet weight of the tablet} - \text{Dry weight of tablet}) \times 100}{\text{Dry weight of tablet}}$$

Determination of extractive value with different solvents

Estimation of extractive value was done according to the method of 12. A known quantity of the powdered drug was taken. Extraction was made in Soxhlet apparatus with different solvents i.e. petroleum ether, ethyl acetate, benzene, methyl alcohol, chloroform, and ethyl alcohol. The extract was filtered and the solvent was evaporated, the accurate weight of the extract was taken. The percentage (%) was calculated with reference to air dried drug [15].

$$\% \text{ extracting value} = \frac{(\text{Weight of flask with extract} - \text{Weight of empty flask}) \times 100}{\text{Weight of sample}}$$

Micromeritic evaluation of powder

The micromeritic characteristics for powder form of *Rosa centifolia* flower petals such as Bulk density, Tapped Density, The angle of repose, Hausner's ratio, and Carr's index were determined according to the official standard procedure (9).

Preparation of ethanol extracts and fractions

The plant's materials fresh flower petal samples (200 gm) were dried under shade at 25 ± 2 °C & then pulverized by a mechanical grinder & sieved. The extraction was done with a suitable solvent having potent activity. Ethanol as a solvent was used for the extraction of plant material. Extraction was done by Soxhlet apparatus **intro3 intro4**. After completion of the extraction process, the sample was filtered with filter paper and the solvent was evaporated using a rotary evaporator under 40-45 C for 30 min resulting in a semisolid crude extract and weighed (5.37 g). A small quantity (0.37 g) of Crude ethanol extract was transferred in a test tube for the various phytochemical studies of ethanolic extract. The crude ethanol extract was dissolved in distilled water (500 ml) and then successively fractionated (5 times each) with a different solvent system like petroleum ether and ethyl acetate in a separating funnel. After fractionation, all crude extracts were put inside the fume hood for a few days. After the solvent evaporates, the ethyl acetate (1.30 g) and petroleum ether crude extracts (1.62 g) were obtained (Kamil et al., 2018).

Preliminary phytochemical study

The stock solution was prepared from the ethanol extract, ethyl acetate, and petroleum ether fractions of various extracts of *Rosa centifolia*. The obtained stock solutions of extract were then subjected to qualitative screening for identification of plant constituents such as tests for alkaloids, tannins, steroids, glycoside, flavonoids, saponins, carbohydrates, terpenoids, and proteins.

Test for carbohydrates**Molisch's test for carbohydrate**

Different crude extracts (500 mg) were dissolved in 5 mL of distilled water each and later filtered. A few amounts of ethanol were added to these filtrates. Then 1 mL of concentrated H₂SO₄ was transferred carefully along the side of the test tube. After two minutes, 5 mL of distilled water was added. Presence of carbohydrates indicated by the positive test, was confirmed with the development of dull violet or reddish color at the interphase of the two layers of the solution [17].

Fehling's test for reducing sugar

Different crude extracts of approximately 2.5 mg were dissolved individually in 1.5 mL of distilled water and filtered. Next, A ratio of 1:1 Fehling's solutions A and B were added to the filtrates about 1 mL mixture, then heated on a water bath for 5 minutes. The brick-red color precipitate confirmed the presence of reducing sugars [17].

Test or starch

In 2.5-3.5ml of the various crude extract, 0.01 gm of Iodine and 0.075 gm of KI were dissolved in 5ml of distilled water were added. The formation of a blue color shown the presence of starch(Joshi et al., 2013)

Tests for alkaloids**Mayer's test**

The different crude extract was taken, then a few drops of Mayer's reagent (potassium mercuric iodide solution) were added. Turbidity or a cream color precipitate formation showing the presence of alkaloids.

Wagner's test

The different crude extract was taken, then a few drops of Wagner's reagent (iodine-potassium iodide solution) were added, yielding reddish-brown precipitate indicating the presence of alkaloid.

Dragendorff's test

The different crude extract was taken, then a few drops of Dragendorff's reagent (potassium bismuth iodide solution) were added (Phytochemical Screening, Total Phenolics and Antioxidant Activities of Bark and Leaf Extracts of *Goniothalamus Velutinus* (Airy Shaw) from Brunei, 2015).

Test for tannins**FeCl₃ test for tannins**

Different crude extracts were dissolved in 10 ml distilled water and then filtered. A few drops of 1% Iron chloride (FeCl₃) solution was added. Black or blue-green coloration or precipitate shows the positive result for the presence of tannins in the test samples.

Test for flavonoids**Sulphuric acid test**

On the addition of sulphuric acid (60-80%) in various crude extracts, flavones get dissolved into it and produce a deep yellow solution or flavones give an orange to reddish color.

Test for steroid**Liebermann-Burchard reaction**

Mix 2 ml of various crude extracts with chloroform. Add 1-2 mL acetic anhydride and few drops of conc. Sulphuric acid from the side of the test tube. The color that appears in the test is first red, then blue, and finally, turn into green[20].

Test for Sterols/Terpenes**Salkowski Test**

The various extract was treated in chloroform with few drops of conc. sulfuric acid, shaken well and allowed to stand for 5 minutes, the lower layer shows red color representing the presence of steroids and if lower layer appeared yellow color indicated the presence of triterpenoids[21].

Test for amino acid and protein**Ninhydrin test**

The ninhydrin test uses to recognize the presence of alpha-amino acid and definite protein containing free amino groups. The various crude extract (sample solution) heated with ninhydrin molecules, gives characteristics of deep blue or pale yellow these colors appear due to the formation of a complex between to ninhydrin molecule and the nitrogen atom of a free amino acid(Pandey & Tripathi, 2014).

Test for glycosides**Anthraquinone glycoside (Borntrager's test)**

To the various crude extract solution (1 mL), 5% H₂SO₄ (1 mL) was added. The mixture was boiled and then filtered. The filtrate was then shaken with an equal volume of chloroform and kept standing for a few minutes (5 min). Then a lower layer of chloroform was shaken with half of its volume with dilute ammonia. The ammonical layer turns rose-pink to red. The ammonical layer designates anthraquinone glycoside.

Cardiac glycoside (Keller-killiani test)

Approximately 1 g of various crude extract was shaken with 10 ml distilled water. Glacial acetic acid (4mL) containing a few drops of ferric chloride was added, to this. Followed by addition of H₂SO₄ (2 mL) along the side of the test tube. The formation of a brown ring at the interface is a positive indication for cardiac glycoside and a violet ring may appear just below the brown ring(Iqbal et al., 2015).

Test for Saponins

The various crude extract was diluted with distilled water and it was agitated for some time (15 minutes). The formation of stable layer persistent foam/froth exhibited the presence of saponins[24].

Test for Vit C/Ascorbic acid

To the test solution of various extracts, 2 ml of distilled water, 0.1 gram of sodium bicarbonate, and about 20 mg ferrous sulfate were added, shaken, and allowed to stand for 5 minutes. A deep violet color was formed. The color disappeared after the addition of 5 ml of 1 M sulphuric acid showing the presence of Vitamin C/ascorbic acid[15].

Thin-layer chromatography profiling of extract

The TLC profiling was performed as described by Biradar *et al.*, 2013. The TLC plates were prepared by using Silica gel 'G' as 20 gm of silica gel was weighed and mixed with 50 ml distilled water for two minutes to a homogenous suspension, this suspension was dispersed over the glass plate which was air-dried until the transparency of the layer disappeared. The plates were dried at 110°C for 30 min in a hot air oven and then stored in a dry place and used whenever required. Samples were prepared by diluting the crude extracts with a there respective solvent system of petroleum ether, ethyl acetate, and ethanol. Then applied usually 1-10µl volumes to the origin point of a TLC plate 2cm above its bottom with the help of capillary tubes(Sonam et al., 2017).

$$R_f = \frac{\text{Distance traveled by the streak from the starting point}}{\text{Distance traveled by the solvent from the starting point to the solvent front.}}$$

The fractions were kept at 4°C in the refrigerator for further work.

Developing system

The TLC studies for the sample were performed for the detection of flavonoid and phenolic compounds using the solvent systems petroleum ether, ethyl acetate, and ethanol (7: 2: 1). The plates were air-dried and visualized by I2 vapor and UV lamp the presence of one spot on the TLC plate. In I2 vapor spot of test, sample appears green color while in UV lamp spot gives orange-brown color. The relative front (R_f) of various extracts (three extracts) was calculated. Spots were separated by running on TLC plates in the particular solvent systems and collected by scrapping silica from the TLC plate for further study. (S. Patel & Adhav, 2016)(Chattopadhyay et al., 2016)

III. RESULT AND DISCUSSION

Macromorphological description

The Rosa centifolia flower petals are moderate pink to light red with comparatively small flowers growing in assemblages. In this study, the pharmacognostical data on the Rosa centifolia petals herbal drug can assist as a relevant source of information. The results of macromorphology were shown in table 1. Rosa centifolia flowers were illustrated in figure 1 comprising the fresh rose petals, dried rose petals, and powdered rose petals. According to the World Health Organization (WHO), medicinal plants are the best source to obtain the most effective variability of drugs and pharmacologically active compounds. Therefore, medicinally active herbal plants should be investigated to recognize their properties and effectiveness[28].

Table 1: Macromorphological description

S. No.	Characters	Observations
	Organoleptic Characters	
1.	Colour	Magenta on base and light yellow near to apex
2.	Odor	Aromatic Distinct
3.	Taste	Distinct tongue sensitizing aromatic taste with pleasant mild sweetness
4.	Rodent contamination	Absent
5.	Insect infestation	Absent
Quantitative Macromorphology of Fresh petals		
6.	Width	0.9-3.7cm
7.	Length	1.7-4.2cm
Extra Features		
8.	Shape	Heart/ Pear Shape
9.	Texture	Soft and smooth





Fig.1: The Fresh Petals and powdered *Rosa centifolia* flowers

Physicochemical standardization of petals

Determination of Ash value

Ash determination is often useful for the detection of low-grade crude drug, exhausted drugs and excess of sandy or earthy matter in drugs; ash determination is more particularly applicable to powdered herbal drugs [12]. All traces of organic matter is removed from the plant material by ashing plants. Ashing at too high a temperature may also result in the formation of complex silicates which are not soluble in hydrochloric acid and an apparent loss of some constituents may result from it. The list of various elements present in the plant is investigated by ash value. The purity of drugs is particularly evaluated by total ash value, the presence or absence of foreign inorganic matter such as metallic salts and/or silica. The total ash value of the crude drug was 3.2.1 found to contain an average of 11.34 %, the value of water-soluble ash 6.46%, and acid insoluble ash found to be 3.29 %. The presence of inorganic constituents indicated by high total ash value and presence of the negligible amount of siliceous matter in drug indicated by the very low value of acid-insoluble ash. The ash value varies within fairly wide limits for a different type of crude drug and it is an important parameter for the evaluation of crude drugs. The percentage variation of ash from sample to sample in certain drugs is very small while marked difference designates the change in the quality of the drug. An increase in ash value demonstrates the, unwanted adulterants of the drugs. A high value is symbolic of contamination, substitution, adulterations, or carelessness in preparing the crude drug for marketing. The total ash value, acid insoluble ash value, water-soluble ash values were determined and the results are presented in table 2.

TABLE 2: Ash values (%) of the powdered material of plant

S. No.	Ash value	Result % (average value)
1.	Total ash	8.347±0.003
2.	Water soluble ash	5.440±0.005
3.	Acid insoluble ash	2.213±0.003
4.	Sulphated ash	2.99±0.050

The consistency and extractive values of different extracts

Determination of extractive value of crude drug with diverse solvent system is significant because an extractive value indicates isolation and quantification of chemical substances present in the given sample of plant species. The solvents of higher extractive values and solvents with lower extractive value may be avoided. The extractive values of plant sample are useful to assess the phytochemical constituents present in the crude drug sample and also help in approximation of solubility of constituents in a particular solvent. The presence of polar substance like phenols, tannins and glycosides designated by high alcohol soluble and water-soluble extractive values. In the present study, it was found that extractive value was highest when extraction was done with ethanol and lowest with petroleum ether i.e. 18.27 % and 7.29 % respectively results are shown in Table 3.

Table 3: The consistency and extractive values of various extract of crude drug (*Rosa centifolia* petals)

S. No.	Treatment (solvent)	Consistency	Average extractive values (% w/w)
1.	Ethanol	Sticky	18.26±0.003
2.	Petroleum ether	Sticky	7.203±0.006
3.	Ethyl acetate	Sticky	13.24±0.012
4.	Benzene	Sticky	9.520±0.005
5.	Chloroform	Sticky	8.310±0.005

Other Physicochemical parameters

Volatile matter of crude drug estimated by the determination of loss on drying. The amount of volatile matter including water that is present in the plant material was estimated with the help of it. Percent Loss on drying was found to be 14.30%. To avoid

decomposition of crude drugs, either due to chemical change or microbial contamination, the moisture content of a drug should be reduced. The percentage of moisture content present in crude drugs from the 10-20% range, shows an ideal range for bacteria as well as for fungal development. The swelling index indicates the level of polysaccharide that is present in certain drugs. If the swelling index of powder changes if the powder has been not properly stored and swelling index is one of the characteristics for the botanical identification of drugs. For the *Rosa centifolia* drug, the swelling factor in water after 24 hours was found to be 4.8 ml. The physicochemical constants such as Ph, foreign organic matter, and moisture sorption capacity of *Rosa centifolia* were carried out to confirm the identity of the herbal drug. These physical parameters are useful in the qualitative evaluation of drugs that contains *Rosa centifolia* petals. These parameters were assessed by standard methods (Table 4).

Table 4: Physicochemical parameters of *Rosa centifolia* petals

S. No	Constants	Yield (average value)
1.	Foreign matter	00
2.	Moisture content (Loss on drying) %	14.30±0.003 %
3.	Ph	6.563±0.003
4.	Swelling Index ml	4.80±0.057
5.	Moisture Sorption Capacity /g	0.723±0.003

Micrometric parameters

The Micromeritic properties of powder crude like Bulk density, Tapped Density, Angle of repose, Hausner's ratio, and Carr's index were determined as a part of the micrometric analysis. Carr's compressibility index and Hausner's ratio give the understanding value of the difference in the bulk and tapped densities. While Carr's index indicates the strength of powder, ability, and guesses solubility of the crude drug. In preparation for drugs, this information is important (Prakasias & Nair, 2016). Inter particulate friction in between particles reveals by Hausner's ratio. The angle of repose is a traditional characterization method for determining the flow property of powder. As the values of angle of repose decrease the flow property of the powdered drug is increases. The result for crude drug showed that the powder has good followability as the angle of repose of powder was found to be 31.25.

Table 5: Micrometric parameters of *Rosa centifolia* petals

S. No	Constants	Yield
1.	Bulk density	0.204±0.003g/ml
2.	Tapped Density	0.257±0.003g/ml
3.	Angle of repose	31.25±0.003
4.	Hausner's ratio	0.778±0.006
5.	Carr's index	22.22±0.003 %

Preliminary phytochemical screening of different extracts of *Rosa centifolia* petals

Phytochemical analysis of fractionated portions of ethanolic extract of the *Rosa centifolia* Patel (ethanol, ethyl acetate, and petroleum ether) and concluded various fraction of plant contain many secondary metabolites such as flavonoids, polyphenols, steroids, and terpenoids. Phytochemical screening of various fraction of crude extract showed that maximum phytoconstituents are present in ethanolic and ethyl acetate fraction. Medicinal plants contain the active secondary metabolites with therapeutic value (Wal et al., n.d.). In numerous parts of the herbal plants various complex chemical substances with a diverse composition which are found as secondary metabolites have therapeutic properties due to the presence of in it. Secondary metabolites play a role in the medicinal properties of the herbal plant, therapeutic value of the plant depends on the quantity and type the phytochemical present in it such as flavonoids are the most active plant constituents with antibacterial and antifungal properties (Hassan & Dangoggo, 2010).

Table 6: Preliminary phytochemical screening of different extracts of *Rosa centifolia* petals

S. No	Plant constituent	Ethanolic Extract	Petroleum ether	Ethyl acetate
1.	Alkaloids	Positive	Negative	Positive
2.	Glycosides	Positive	Positive	Positive
3.	Carbohydrates	Positive	Negative	Negative
4.	Flavonoids	Positive	Positive	Positive
5.	Tannins	Positive	Positive	Positive
6.	Proteins	Positive	Negative	Positive
7.	Amino acids	Positive	Negative	Positive

8.	Sterols	Positive	Positive	Positive
9.	Starch	Positive	Negative	Negative
10.	Cardiac glycosides	Positive	Negative	Positive

Comparative TLC observations of flavonoid and Phenolic compound

The presence of various phytochemicals strengthens by the TLC study revealed the presence of tannins, saponins, glycosides, and flavonoids which are compounds capable of causing varied physio-chemical and pharmacological effects. Their presence therefore plant showed potential for the development of drugs against many diseases and seems to support the traditional use of the unexplored plant *Rosa centifolia*. A similar separation pattern was observed in all fractions of extract shown in results of TLC profiling are summarized in Table 8 and Table 9.

Table 8: Comparative TLC observations of the phenolic compound from different fractions of *Rosa centifolia*.

S. no.	Fraction	Mobile phase Petroleum ether, ethyl acetate, and ethanol (7: 2: 1)								
		Eye			I ₂ vapour			Uv lamp		
		Spot No.	Color	Rf	Spot No.	Color	Rf	Spot No.	Color	Rf
1	Petroleum ether	1	Green	0.77	1	Green	0.78	1	Orange	0.77
2	Ethyl acetate	1	Green	0.77	1	Green	0.78	1	Orange	0.78
3	Ethanol	1	Green	0.77	1	Green	0.77	1	Orange	0.78

Table 9: Comparative TLC observations of flavonoid compound from different fractions of *Rosa centifolia*.

S. no.	Fraction	Mobile phase Petroleum ether, ethyl acetate, and ethanol (7: 2: 1)								
		Eye			I ₂ vapour			Uv lamp		
		Spot No.	Color	Rf	Spot No.	Color	Rf	Spot No.	Color	Rf
1	Petroleum ether	1	Yellowish green	0.78	1	Green	0.78	1	Orange	0.78
2	Ethyl acetate	1	Yellowish green	0.81	1	Green	0.81	1	Orange	0.81
3	Ethanol	1	Yellowish green	0.81	1	Green	0.81	1	Orange	0.81

IV. CONCLUSION

In conclusion, we report this pharmacognostical, TLC data on the *Rosa centifolia* petals that can provide us a relevant source of information and contribute towards the standards for its identification, authentication, and extensive medicinal use of the herbal plant part petals.

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None

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