

PHARMACOGNOSTIC STUDIES OF THE BARK OF *PARKINSONIA ACULEATA*

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Abstract

The bark of *Parkinsonia aculeata* (fam. *Leguminosae*) was studied to fix the parameters for pharmacognostical standards. The results of organoleptic study offer a scientific basis for the use of *P. aculeata* which possess characters like brown colour, characteristic odour and slightly bitter taste. The fluorescence analysis under visible light & under UV light by treatment with different chemical reagents showed different colour changes. The presence of alkaloids, flavonoids, tannins, steroids, and reducing sugars was confirmed during preliminary phytochemical screening.

Keywords Supernatant, degenerative diseases, bio-friendly plant.

Introduction

Medicinal plants have been a major source of cure for human diseases since time immemorial. It is no wonder that the world's one-fourth population i.e. 1.42 billion people, are dependent on traditional medicines for the treatment of various ailments[1]. Medicinal herbs are moving from fringe to main stream use with a greater number of people seeking remedies and health approaches free from side effects caused by synthetic chemicals.

Recently, considerable attention has been paid to utilize eco-friendly and bio-friendly plant based products for the prevention and cure of different human diseases. Considering the adverse effects of synthetic drugs, the Western population is looking for natural remedies, which are safe and effective. It is documented that most of the World's population has taken in traditional medicine, particularly plant drug for the primary health care[2]. The Indian flora offers a variety of plants having medicinal properties. These plants can be exploited to find out effective alternative to synthetic drugs[3].

Materials and Methods

Parkinsonia aculeata was subjected to pharmacognostic study, the various methods used in the study included organoleptic study, fluorescence analysis and preliminary phytochemical studies.

Organoleptic study

The powder of *Parkinsonia aculeata* was used for studies. The colour variation and taste were the basis for this test as given by Jackson and Snowdown[4].

The leaf powders are treated with various chemicals exhibited various colours in the UV light. When the powder was treated with aqueous 1 N NaOH and 50% H₂SO₄ the bark powder exhibited varied reddish yellow and whitish grey colours in UV light. The fluorescence properties were studied under UV light adopting the method described by Kokoshi[5] and Chase & Pratt[6]. The behavior of the samples with different chemical reagents was studied and fluorescence characters were observed on long UV light at 254nm.

When the bark powders were treated with chemicals like FeCl₃, HCl, HNO₃, picric acid, NH₃, NaOH+methanol, etc various shades of yellow, light brown, orange, yellow, brown, yellowish brown, bluish green, etc colours were

obtained[7].

About 20 gm of the powder of *Parkinsonia aculeata* was weighed accurately and mixed with 250 ml of hot water. After 1hour it was filtered and the supernatant was used as the extract. The preliminary phytochemical test of this extract was performed by specific reagents. These extracts were subjected to qualitative chemical tests for detection of various plant constituents.

Result and Discussion

The pharmacognostical characters of the bark powders have been studied by screening the same through varying parameters.

The investigation on organoleptic study of bark powder of *Parkinsonia aculeata* indicated the characters like colour, odour and taste. The colour of the bark powder showed brown colour. The taste and odour of the bark powders were also tested. The taste of the bark is slightly bitter and on analysis the bark powder gives a characteristic odour (Table 1).

The bark powders are treated with various chemicals exhibited various colours in the UV light. When the powder was treated with aqueous 1 N NaOH and 50% H₂SO₄ the bark powder exhibited varied reddish yellow and whitish grey colours in UV light and the results are depicted in Table 2.

When the bark powders were treated with chemicals like HCl, HNO₃, picric acid, NH₃, NaOH+methanol, Iodine solution, etc various shades of light brown, orange, yellow, brown, light yellow, green, etc colours were obtained (Table 3) (Pandey, et.al, 1984).

Pharmaceutical preparation derived from natural resources such as vegetables often contain compounds that contribute the antimicrobial defense systems and apparently play a role in the protection against degenerative diseases.

In the present study, a phytochemical screening was carried out to detect the active constituents such as alkaloids, glycosides, flavonoids, tannins, steroids, reducing sugars and saponins. All the phytochemical tests showed positive results except glycosides and saponins. The results are depicted in Table 4.

Conclusion

The results of organoleptic study offer a scientific basis for the traditional use of *Parkinsonia aculeata* which possess characters like brown colour, characteristic odour and slightly bitter taste. The leaf powders when treated with various chemicals exhibited various colours in the UV light. All the phytochemical tests showed positive results except glycosides and saponins.

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References

- [1] K.J. Reddy, Medicinal plant research scenario in India, Info concepts India Inc., 2004, 25-28.
- [2] N.K. Dubey, R. Kumar, and P. Tripathi, Global promotion of herbal medicine: India's opportunity, Current Science, 2004, 86(1), 37-41.
- [3] S.S. Gaikwadi, V.P. Vadlamudi, S.P. Waghmaee, *et al.* Phytochemical analysis of aqueous extract of few medicinal plants, PKV. Res. J., 2003, 27(1), 91-92.
- [4] B.P. Jackson and D.W. Snowdown, Powdered vegetable drugs, Cheer Chil Ltd., London, 1968, 25.
- [5] G.J. Kokoshi, J.R. Kokoshi, and F.J. Sharma, Fluorescence of powdered vegetable drugs under ultra violet radiation, J. Amer. Pharm. Assn., 1958, 38(10), 715-717.
- [6] C.R. Chase and R.F. Pratt, Fluorescence of powdered vegetable drugs with particular reference to the development of systems of identification, J. American Pharm. Assoc., 1949, 38, 324-333.
- [7] H.C. Pandey, R.S. Dixit, and H.P. Sharma, Addition to the Pharmacognosy of Kalimulri (*Curculigo orchoides*), Bull. Med. Ethnobot.

Table 1. Organoleptic study of the powder

1.	Colour	Brown
2.	Odour	Characteristics
3.	Taste	Slightly bitter

Table 2. The fluorescence analysis of the powder of *Parkinsonia aculeata*

S.No.	Treatment with chemical reagents	Observation
1.	Powder as such	Brown
2.	Powder + 1N Sodium hydroxide in methanol	Light yellow
3.	Powder + 1N Sodium hydroxide in water	Reddish yellow
4.	Powder + 50% Hydrochloric acid	Light green
5.	Powder + 50% Sulphuric acid	Whitish grey
6.	Powder + 50% Nitric acid	Green
7.	Powder + Petroleum ether	Pale green
8.	Powder + Chloroform	Light yellow
9.	Powder + Picric acid	Fluorescent green
10.	Powder + 5% Ferric chloride solution	Green
11.	Powder + 5% Iodine solution	Green
12.	Powder + Methanol	Light Green
13.	Powder + (Nitric acid + Ammonia)	Green

Table 3. The behaviour of the bark powder of *Parkinsonia aculeata* when treated with different chemical reagents

S.No.	Treatment with chemical reagents	Observation
1.	Powder as such	Brown
2.	Concentrated Hydrochloric acid	Light brown
3.	Concentrated Sulphuric acid	Black
4.	Concentrated Nitric acid	Orange
5.	Glacial acetic acid	No change
6.	5% Sodium hydroxide solution	Light yellow
7.	5% Potassium hydroxide solution	Light brown
8.	5% Ferric chloride solution	Yellow
9.	Picric acid	Yellow
10.	Ammonia	Brown
11.	Powder + 1N Sodium hydroxide in methanol	Yellowish brown
12.	Powder + 1N Sodium hydroxide in water	Yellowish brown

Table 4. Phytochemical analysis of *Parkinsonia aculeata*

Extract	Alkaloid	Glycoside	Steroid	Flavonoid	Reducing Sugar	Saponin	Tannin
Benzene	-	-	+	-	-	-	-
Chloroform	+	-	-	+	-	-	-
Ethanol	+	-	-	+	-	-	-
Aqueous	-	-	-	+	+	-	+

+ = Presence.

- = Absence