

Phytochemical Studies of the Grains of *Paspalum scrobiculatum*

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ABSTRACT

The grains of *Paspalum scrobiculatum* Linn. Commonly known as Kodo millet was investigated for its physicochemical and phytochemical screening. According to traditional practice the grains of *Paspalum scrobiculatum* is used for the management of diabetes. Ash value (total ash, acid insoluble ash, water soluble ash and sulphated ash), Extractive value and total phenolic contents were studied dry weight. The phytochemical tests revealed the presence of tannins, phenolics, saponins, proteins and carbohydrates.

Keywords: *Paspalum scrobiculatum*, Physical constants, Phytochemical tests, Diabetes.

INTRODUCTION

Pharmacognosy is the study of the structural, physical, chemical and sensory characters of crude drugs of animals, plants and mineral origin. The search for biologically active compounds from natural sources has always been of great interests to researchers looking for new sources of drugs useful in infectious diseases. The indigenous population has developed vast knowledge on the uses of plant as traditional medicines to protect themselves and their crops, plants are known to contain numerous biologically active compounds which possess curative properties. Higher plants have played a vital role as the source of important therapeutic agents. Only a small percentage of higher plant species have so far been exploited and much remains to be done.^[1]

Paspalum scrobiculatum Linn. belonging to family *Poaceae*, commonly known as 'Kodo millet', it is a tufted perennial grass, up to 120-150 cm tall, culms stout glabrous, somewhat bulbous at base, distributed in Madhya Pradesh, Chattisgarh and Karnataka in India.^[2] Traditionally the grains of this plant are used in the management of diabetes mellitus.^[3] The grains are also useful in the treatment of inflammation, haemorrhages, and general debility.^[4] The present investigation deals with the studies on some important physicochemical and phytochemical characteristics of the grains of *Paspalum scrobiculatum* as whole and its powdered form.

MATERIAL AND METHODS

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Plant material

The grains of *Paspalum scrobiculatum* Linn. was collected from Dindori, Chattisgarh in the month of September and were authenticated in Government Agriculture College, Indore, Madhya Pradesh. A voucher specimen (SCOPE/PHCOG/06-08/04) is retained in our department for further reference. The grains were air-dried and were pulverized in a mechanical grinder to fine powder.



Grains of *Paspalum scrobiculatum*

Physicochemical analysis

Powder of grains of *Paspalum scrobiculatum* were subjected to physicochemical study for determination of ash value and extractive value using the method described by Indian Ayurvedic Pharmacopeia.^[5] The results are presented in Table 1 and Table 2. The powder of grains was exhaustively

extracted with petroleum ether, chloroform, alcohol (95 %) and water [6], successively by soxhlation; extracts were dried in rotary vacuum evaporation and their colour and consistency were observed (Table 3).

Preliminary phytochemical studies

Qualitative screening of the grains was performed for the identification of various classes of active chemical constituents using the methods described by Raman [7], Harborne [8] and Wagner. [9] The results are presented in Table 4.

Phenol Content Analysis

Total phenolic content of ethanolic and aqueous extract of grains was carried out with the Folin-Ciocalteu reagent using standard Gallic acid following the method described by Sadasivam and Manickam. [10]

Table 1: Ash values of grains of *Paspalum scrobiculatum*

Nature of ash	% age (w/w) ash
Total ash	2.25
Acid insoluble ash	1.33
Water-soluble ash	1.66
Sulphated ash	3.42

Table 2: Extractive values of grains of *Paspalum scrobiculatum*

Solvent used	Percentage of extractive value
Petroleum ether (60-80°C)	2.86
Chloroform	1.03
Ethanol (90%)	5.61
Distilled water	5.11

Table 3: Colour and consistency of the grains of *Paspalum scrobiculatum*

Extract	Colour	Consistency
Petroleum ether	Light brown	Semi solid
Chloroform	Light brown	Semi solid
Ethanol	Dark brown	Semi solid
Distilled water	Dark brown	Semi solid

Table 4: Details of qualitative phytochemical tests

S. No.	Tests	Pet. Ether	Chloroform	Ethanol	Aqueous
1.	Tannins and Phenolic compounds	-	-	+	-
2.	Alkaloids	-	-	-	-
3.	Glycosides	-	-	-	-
4.	Amino acids	-	-	+	-
5.	Fixed oils and fats	+	-	-	-
6.	Saponins	-	-	-	+
7.	Proteins	-	-	+	-
8.	Carbohydrates	-	-	+	+

(+) = Present (-) = Absent

RESULTS AND DISCUSSION

Physicochemical Analysis

Results shown in all tables' aid in identification and standardization of the grains of *Paspalum scrobiculatum*. The results of ash values of grains (Table 1) and extractive values (Table 2) showed the ethanol have higher quantity of extract in comparison to other solvent extracts. The colour and consistency of the various polar and non-polar extracts of grains were also evaluated (Table 3).

Preliminary Phytochemical Analysis

Qualitative phytochemical studies of grains were performed on its petroleum ether, chloroform, ethanolic and aqueous extracts revealed the presence of Tannins and Phenolic compounds, Carbohydrate, Saponins, Protein & Amino acid, by using suitable chemicals and reagents (Table 4).

Phenol Content Analysis

Total phenols were estimated by using Folin-Ciocalteu reagent. The findings showed that the total phenolic content in ethanolic and aqueous extracts was found to be 64.18 ± 1.17 mg/g GAE and 18.71 ± 0.59 mg/g GAE dry extract respectively.

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