



**PHARMACOGNOSTICAL AND PHYTOCHEMICAL EVALUATION OF
STHAULYAHARA DHANYA (MILLET) – KODRAVA (*PASPALUM
SCROBICULATUM LINN.*)**

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ABSTRACT

Kodrava (*Paspalum scrobiculatum linn*) is described in Ayurveda under the classification of Kshudra Dhanya (millets). It is mentioned as Pathya (wholesome) for many diseases such as Sthaulya (obesity), prameha (Diabetes Mellitus), Bhagna (Fracture), Raktapitta, Vrana, Annadrava Shoola, Jalodara (Ascitis) etc. The present study deals with the standardization of Kodrava (*Paspalum scrobiculatum linn*) through the Pharmacognostical and pharmaceutical standards. Organoleptic features of coarse powder were within normal range. The water soluble extract 1.9% w/w, methanol soluble extract 1.3%, ash value 0.76%, loss on drying 11.33%. HPTLC was carried out after organizing appropriate solvent system in which maximum 10 spots were distinguished at 254 nm and 9 spots at 366 nm.

Keywords: Sthaulya, Kodrava, Pharmacognosy, Physico-chemical analysis, HPTLC.

INTRODUCTION

Sthaulya (Obesity) Kodrava (*Paspalum scrobiculatum* linn) is described in Ayurveda under the classification of 'Kshudra Dhanya (millets)'.ii It is mentioned as Pathya (wholesome) for many diseases such as Sthaulya (obesity), prameha (Diabetes Mellitus), Bhagna (Fracture), Raktapitta, Vrana, Annadrava Shoola, Jalodara (Ascitis) etc. Two different types or species of Kodrava viz. Kodrava & Vanakodrava have been mentioned in classical texts of Ayurveda. Last one is also known as Uddalakaiiii. Poisonous effects of Kodrava have also been described, if taken newly and husked. Generally it is used as a food article and few recipes of Kodrava (*Paspalum scrobiculatum* linn) have been described in Ayurvedic texts of ancient and medieval period.iv It is also used as material for topical treatment i.e. Lepa (plastering) inv. In the present study Kodrava (*Paspalum scrobiculatum* linn) was purchased from Market and the sample was analyzed pharmacognostically and physico-chemically.

To evaluate the quality of finished products it becomes necessary to subject the drug for different chemical studies in the prospect of science. The drugs which are used should be well understood in the light of modern chemistry to provide proper scientific background. *Paspalum scrobiculatum* Linn. is belonging to family Poaceae, commonly known as 'Kodomillet', is in 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. It is a native of India; mostly grown in Gujarat, Konkan and over the Deccan plateau. Kodrava consists of de husked and well-matured caryopsis of *Paspalum scrobiculatum* Linn. (Fam. Poaceae), an annual grass 60 to 90 cm tall, cultivated in the plains of India for its grains. This Plant is an annual herb, which contains short rhizome, rooting at lower nodes, simple linear leaves, elongated with strong mid rib of 2-40 × 0.2-1.2 cm, acute stem with proper node and internode. Inflorescence racemes, spikelets broadly ovate to elliptic. Newly gathered grains with husks are poisonous; husks are removed prior to use or powdering. (Storage for six months seems to remove the poisonous principle)vi.

MATERIALS METHODS

The grains of *Paspalum scrobiculatum* Linn. were collected from market, Jamnagar in the month of April and were authenticated in Pharmacognocny department, IPGT & RA, Gujarat Ayurved University Jamnagar. A voucher specimen is retained in the department for further reference. The grains were air-dried and were pulverized in a mechanical grinder to fine powder.

Parts used: dried decorticated grain

Pharmacognostical evaluation^{vii}:

Raw drugs were identified and authenticated by the Pharmacognocny Laboratory, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar. The identification was carried out based on the morphological, organoleptic and powder microscopy of the drug. Study has been done under the Carl Zeiss microscope attached with camera, with stain and without stain. The microphotographs were taken under the microscope.

Pharmaceutical analysis:**Physico-chemical parameters:**

Kodrava was analyzed by using standard qualitative and quantitative parameters at the pharmaceutical chemistry Laboratory, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar. Parameters were selected on the basis of common parameters mentioned for powder in Ayurvedic Pharmacopoeia of India and CCRAS guidelines^{viii}. The formulation was assessed for ash value, loss on drying, water and methanol soluble extracts.

High performance Thin Layer Chromatography study (HPTLC)ix:

Methanol extract of Kodrava was spotted on pre coated silica gel GF 254 aluminium plate as 5mm bands, 5 mm apart and 1 cm from the edge of the plates, by means of a Camag Linomate V sample applicator fitted with a 100 µL Hamilton syringe. Ethyl acetate : water : Acetic acid (8 :1: 1) were used as the mobile phase. After development, Densitometric scanning was performed with a Camag TLC scanner III in reflectance absorbance mode at 254nm and 366 nm under control of win CATS software. The slit dimensions were 6 mm×0.45 mm and the scanning speed was 20 mm per second. All HPTLC plates were scanned with filter fraction Savitsy-goloy 7, minimum slope 5, minimum height 10 AU, minimum area 50 AU, maximum height 990 AU with absorption unit.

RESULTS WITH DISCUSSION**Organoleptic characteristics:**

Characters	Observed
Texture	Coarse
Colour	Creamish white
Odour	Characteristic
Taste	Tasteless

Macroscopic:

Grain oval to rounded in shape, plano-convex and up to about 4 mm in length; pericarp brown, adherent to seeds, can be removed by rubbing; as seen under hand lens, on the convex side of caryopsis, there is one central line, and on the plane surface, three lines; inside pericarp is a shiny brown seed; seeds possess three prominent ridges on the convex side and in between these ridges, fine striations are present; plane side of the seed shows finely striated oval central depression, apical side pointed.

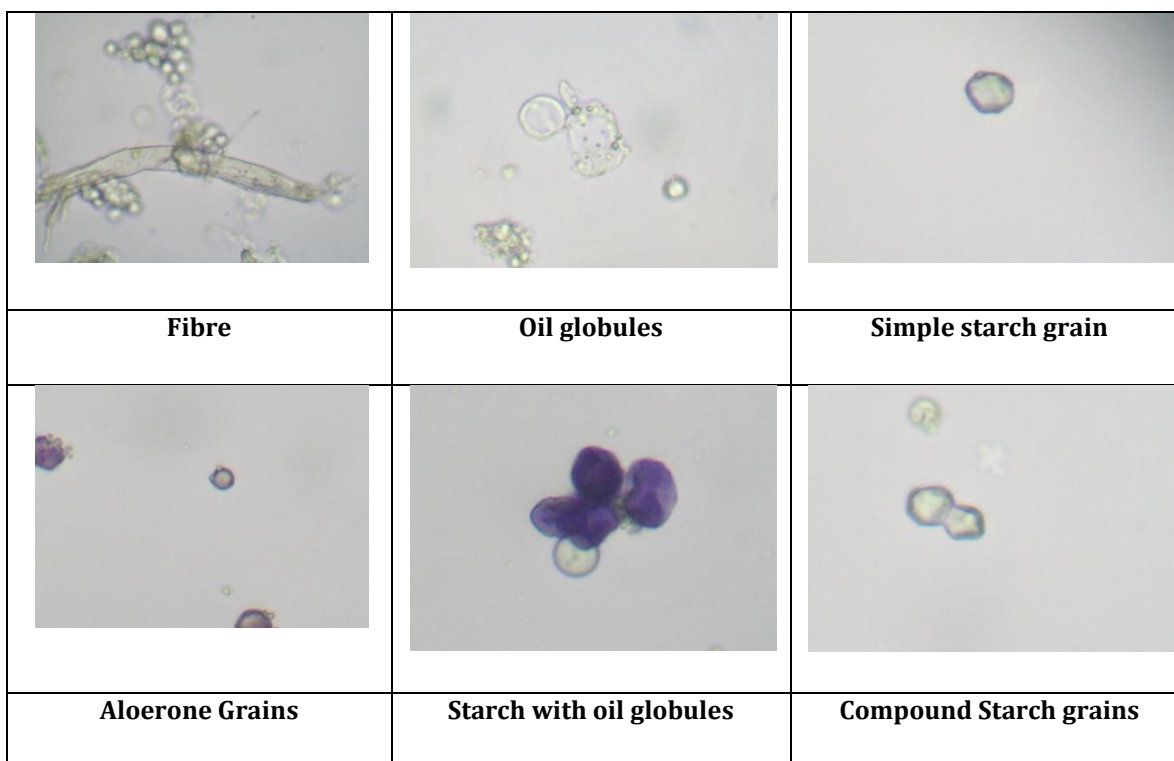
Microscopic:

T.S. shows thick pericarp composed of 6 to 10 layers of cells; outermost layer elongated withouter and inner walls lignified; below this, cells have thickened walls, and a much-reduced lumen; testa not well defined and composed of crushed cells; cells of scutellum irregular in shape and usually contain oil droplets; outer cells of endosperm contain aleurone grains; endosperm cells thin walled, polygonal, large and fully packed with penta to hexagonal starch grains, usually 8 to 20 μ.

Powder:

Creamish white, fine, free flowing, fine smooth in touch, no taste with characteristic odour. Diagnostic characters are starch grain with hilum, tannin along with aleurone grains, fibers, oil globules, simple starch grains, aleurone grains (projection in circular region). Microphotographs are shown in figure 1.

Figure 1:



Physico-chemical parameters:

Physico-chemical characters are shown in Table which was within the normal range.

Sr. No.	Test	Result
1.	Loss on Drying at 110 ^o C	11.33 % W/V
2.	Ash Value	0.76 % W/V
3.	Water soluble extract	1.9 % W/V
4.	Methanol soluble extract	1.3 % W/V

Results of HPTLC study of Kodo millet:

Solvent System: Ethyl acetate : water : Acetic acid (8 : 1: 1)

Conditions	No. of Spots	Max. Rf	Area
Short UV (254 nm)	10	0.01, 0.04, 0.09, 0.25, 0.37, 0.41, 0.54, 0.67, 0.79, 0.91	1046.4, 332.7, 259.0, 153.6, 3735.5, 2626.8, 1259.8, 1581.8, 1091.4, 18405.3
Long UV (366 nm)	9	0.01, 0.04, 0.25, 0.37, 0.41, 0.56, 0.68, 0.71, 0.89	719.9, 125.5, 98.2, 2832.4, 1822.9, 911.6, 373.0, 1075.7, 5539.8

Table 1: Showing consolidated data of HPTLC profile of Kodo millet (powder)

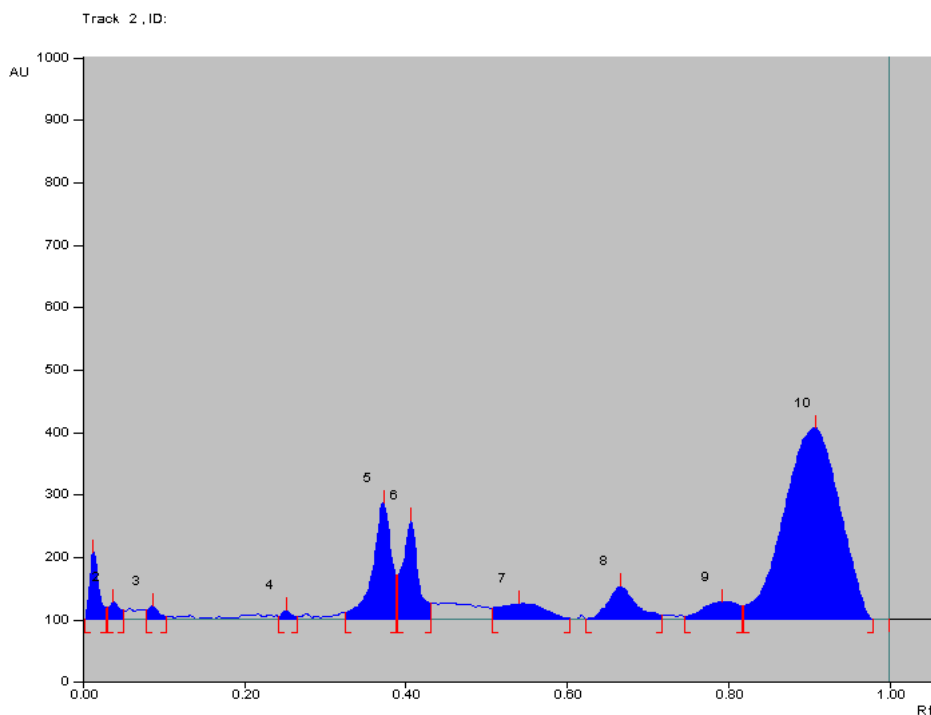


Figure 2:Densitogram of Kodo millet at 254 nm

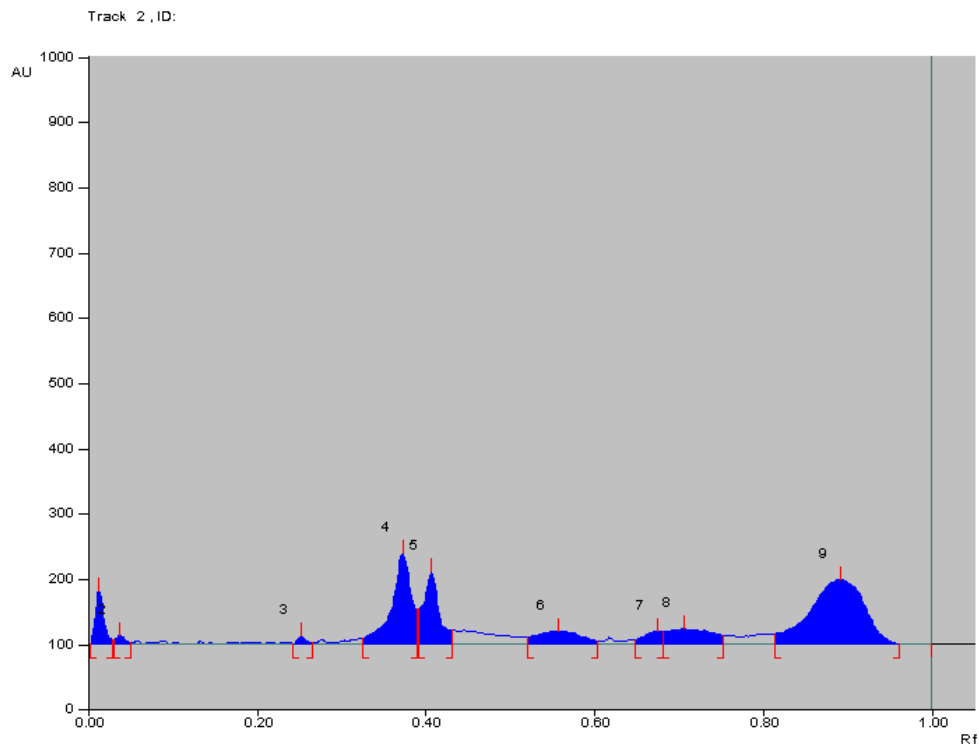


Figure 3:Densitogram of Kodo millet at 366 nm

CONCLUSION

Pharmacognostical findings confirm the ingredients present in market sample. Raw drugs were cross verified with API and no major change was observed. When the finished product was analyzed under the microscope, all the ingredients were found present which were in the formulation. It is inferred that the formulation meets the minimum qualitative standards as reported in the API at a preliminary level. The results of this study may be used as the reference standard in further research undertakings of its kind.

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