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Title of Article

Evaluation of Physico-chemical And Chromatographic Profile of Kasani Seeds (*CICHORIUM INTYBUS* L.)

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ABSTRACT:

Medicinal plants constitute an effective source of traditional and modern medicine. In India, about 80% of the rural population depends on medicinal herbs and/or indigenous system of medicine for primary health care.One of such traditional herb is kasani.

The Kasani, *Cichoriumintybus*of family Asteraceae , class Magnoliopsida, which is also known as Chicory, is well known traditional herb included in many system of medicine like Ayurveda, Unani and Siddha system of medicine[1].

Kasani is extensively used in many ayurvedic and herbal formulations.For proper and effective results of such medicines,raw materials used should be of perfect parameters like its foreign matter content, total ash, acid insoluble ash, water soluble ash, its extractive value etc. as described in API.Standard parameters of Kasani are not mentioned in API[2].The present article reviews the Ayurvedic aspects of Kasani well supported by the available literature and its physico-chemical and chromatographicanalysis. Through this article, we have set perfect range of parameters of all physico-chemical and chromatographic analysis carried out by water and alcohol extraction at Unijules pharmacy, Kalmeshwar, Nagpur.

KEYWORD: Kasani, *Cichoriumintybus*, Chicory, Inulin, Ayurveda, Unani and Siddha, physico-chemical, chromatographical, extraction

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INTRODUTION:

Kasani commonly known as chicory (*Cichoriumintybus*L.), belongs to family Asteraceae (Compositae) and widely distributed in Asia and Europe .It is a small aromatic biennial erect perennial herb around 1 m. in height with a fleshy taproot up to 75 cm in length and mainly it contain alkaloids, inulin, sesquiterpene lactones, coumarins, vitamins, chlorophyll pigments, unsaturated sterols, flavonoids, saponins, tannins, carbohydrates, glycosides, fats, gums and minerals[1].
All parts of this plant have great medicinal importance due to the presence of a number of medicinally important compounds such as alkaloids, inulin, sesquiterpene lactones, coumarins, vitamins, chlorophyll pigments, unsaturated sterols, flavonoids, saponins andand tannins.

Botanical Summary: Chicory belongs to the-

Kingdom : Plantae, Division: Magnoliophyta,
Class : Magnoilopsida,
Family : Asteraceae,
Genus : Cichorium,
Species :*Cichoriumintybus*L. (Saxena et al. 2014)[3]

Genus chicorium consists of six species 1. It is an erect fairly woody perennial herb around 1m height with a fleshy taproot of upto 75 cm. length & large basal leaves .

Parts:

Leaves: The leaves are broadly oblong, oblanceolate or lanceolate, crowded at the base, forming a rosette arranged spirally on the stem. The upper leaves are cordate and amplexicaul; the lower leaves are long and pinnate .

Stems: The stems are angled or grooved, with spreading branches, bright blue flowers, short pappus and very long, spreading,-toddled ligules .
Roots: The roots of chicory are brownish yellow outside and white inside, with a thin bark. It is well developed; the central part is mature and contains a portion of xylem including numerous vessels .
Fruits: The fruits are dry, indehiscent, 3 mm long, 2 mm broad and crowned with a ring of 0.5 mm long pappus which is usually white but sometimes half white and half straw coloured.
Seeds: The seed inside the fruits are 2.5 mm long & ovoid, with pointed apex, brownish tip and while plano convex cotyledons.

PHYSICO-CHEMICAL ANALYSIS OF KASANI SEEDS-

A) Description of Kasani

- Color-Creamish green
- Odor-Odorless
- Taste-Tikta
- Texture-Rough
- Fracture-Sound present on fracture

B) **Foreign matter**

The sample shall be free from visible signs of contamination, i.e. moulds, insects and other animal contamination, including animal excreta, fungus and dust. However, no poisonous, dangerous or otherwise harmful foreign matter or residue should be allowed[4].

Sample 1-

1)Weight of samle taken(W1)-100 g.

2)Weight after sorting of sample(W2)-99.15 g.
3)Weight of foreign matter(W3)-0.85g.

Calculations -

$$\frac{W1-W2}{W1} \times 100 = \frac{100-99.15}{100} \times 100$$

=0.85% w/w

Sample 2-

1)Weight of samle taken(W1)-100 g.
2)Weight after sorting of sample(W2)-99.25 g.
3)Weight of foreign matter(W3)-0.75g.

Calculations -

$$\frac{W1-W2}{W1} \times 100 = \frac{100-99.25}{100} \times 100$$

=0.75% w/w

Sample 3-

1)Weight of samle taken(W1)-100 g.
2)Weight after sorting of sample(W2)-99.20 g.
3)Weight of foreign matter(W3)-0.80g.

Calculations -

$$\frac{W1-W2}{W1} \times 100 = \frac{100-99.20}{100} \times 100$$

=0.80% w/w

Sample 1	Sample 2	Sample 3
0.85%w/w	0.75%w/w	0.80%w/w

C)Total Ash Value-

The total ash was obtained by taking accurately weighed 2 g of the dried plant material was taken in a tarred Silica dish and was ignited with a flame of Bunsen burner for about one hour. The ignition was completed by keeping it in a muffle furnace at 550°C ± 20°C till grey ash was formed. It was then cooled in desiccators and weighed[4].

A) Sample 1

Weight of empty crucible (W1)-36.5478 g.
Weight of crucible with sample (W2)–37.5512 g.
Weight of crucible after heating (W3)–36.6450 g.

$$\text{Total ash value} = \frac{W3-W1}{W2-W1} \times 100$$

=9.68%

B) Sample2

Weight of empty crucible (W1)-33.5428 g.
Weight of crucible with sample (W2)–34.5520g.
Weight of crucibleafter heating (W3)–33.6510g.

Total ash value= 10.72%

C) Sample 3

Weight of empty crucible (W1)-35.5550 g.
Weight of crucible with sample (W2)–36.5612g.
Weight of crucible after heating (W3)–35.6510g.

Total ash value=9.54%

Sample 1	Sample 2	Sample 3
9.68%	10.72%	9.54%

D) **Acid Insoluble Ash** :-

The total ash was moistened with 25 ml dilute HCI and evaporated to dryness after which it was kept in an electric air oven maintained at 135°C ± 2°C for 3 hr. It was

then allowed to cool, and was filtered through Whatmann filter paper No. 41. The residue was then washed with hot water . The filter paper and the residue were put in a dish and ignited in a muffle furnace at 550°C ± 20°C for one hour. The process of cooling in a desiccators and weighing was repeated till the difference between two successive weights was found to be less than one mg[4].

Sample 1	Sample 2	Sample 3
6.05%	6.02%	6.04%

E) **Water soluble extractives:-**

Accurately weighed 2.5 g of powder was placed in glass-stoppered conical flask. To it 50 ml of water was added. The flask was shaken frequently for six hours, and then allowed to stand for eighteen hours. The contents were filtered rapidly to avoid loss of solvent. The 5ml of filtrate was transferred to a previously weighed clean petri dish and evaporated to dryness on a water-bath. After evaporation the extract was dried at 105°C for six hours and kept in a desiccator for cooling. The beaker was weighed and percent extractable matter in water was calculated[4].

Sample 1-
W1-47.2280 g.
W2-47.2558 g.

Water soluble extractive value-Weight of residue(W2-W1) x 10 x100 ÷ Weight of sample

=11.12%

Sample 2-
W1-42.4010 g.
W2-42.4330g.

Water soluble extractive value- 12.80%

Sample 3-
W1- 45.5220g
W2- 45.5560g

Water soluble extractive value- 13.6%

Sample 1	Sample 2	Sample 3
11.12%	12.80%	13.6%

F) **Alcohol soluble extractives:-**

Accurately weighed 1.25 g ofpowder material was placed in glass-stoppered conical flask. To it 25 ml 90% ethanol was added. The flask was shaken frequently for six hours, and then allowed to stand for eighteen hours. The contents were filtered rapidly to avoid loss of solvent. The filtrate was transferred to a previously weighed clean beaker and evaporated to dryness on a water-bath. After evaporation the extract was dried at 105°C for six hours and kept in a desiccator for cooling. The beaker was weighed and percent extractable matter in water was calculated[4].

Sample 1-
W1-43.7034g.
W2-43.7327g.

Alcohol soluble extractive value-Weight of residue(W2-W1) x10x100 ÷ Weight of sample =55.84%

Sample 2-
W1-42.8400g
W2-42.8760g.

Alcohol soluble extractive value- 28.80%

Sample 3-
W1-44.7034g
W2-44.7330g.

Alcohol soluble extractive value- 23.68%

Sample 1	Sample 2	Sample 3
55.84%	28.80%	23.68%

Qualitative analysis

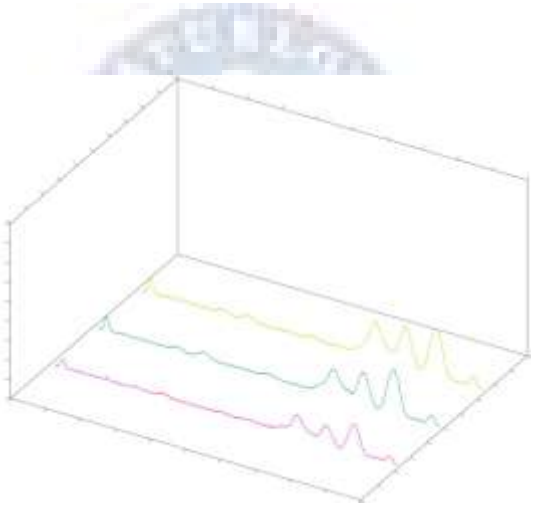
G) Finger printing type of High performance thin layer chromatography

Stationary phase

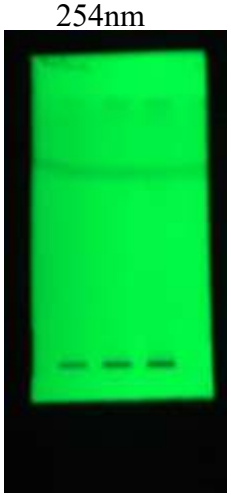
Plate size (X x Y)	5.0 x 10.0 cm
Material	HPTLC plates silica gel 60 F 254

Development - Glass tank

Chamber type	Twin Trough Chamber 20x10cm
Mobile phase	Tolune : ethyl acetate : Glacial Acetic acid 7 : 3 : 1
Solvent front position	85.0 mm
Volume	10.0 ml
Drying device	CAMAG TLC Plate Heater III
Temperature	60 °C
Chamber type	Twin Trough Chamber 20x10cm
Executed by	Unijules Life Sciences Ltd.



254nm

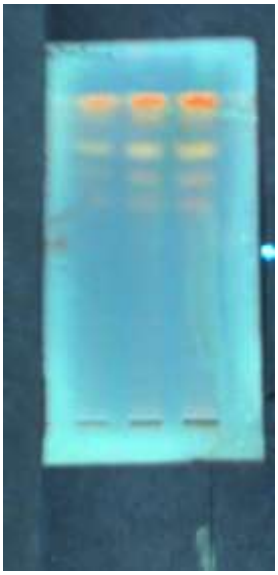
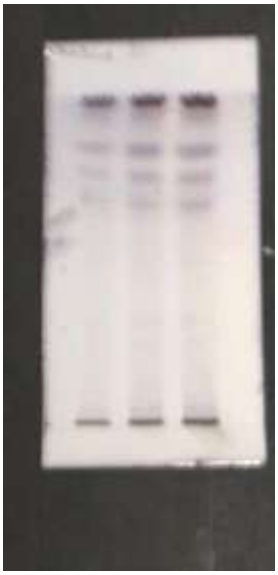


366nm

white R

After Derivatisation

254nm 366nm white R

Discussion and Conclusion-

Kasani commonly known as chicory (*Cichoriumintybus*L.),is a small aromatic biennial erect perennial herb around 1 m. in heightAll parts of this plant have great medicinal importance and is used as content in many formulations in Ayurveda.Itsphysico-chemical analysis of different samples are as follows-

	Sample 1	**Sample 2**	**Sample 3**	**Range**
Foreign matter	0.85%w/w	0.75%w/w	0.90%w/w	**Not More than 1%w/w**
Total Ash	9.68%	10.72%	9.54%	**Not More than 15%**
Acid Insoluble Ash	6.05%.	6.02%	6.04%	**Not more than 6%**
Water soluble extractive value	11.12%	12.80%	13.6%	**Not More than 15%**
Alcohol soluble extractive value	55.84%	28.80%	23.68%	**Not More than 60%**

From physico-chemical analysis of all 3 samples, the range of individual parameters for Kasaniwere set as other drugs mentioned in API.

Also, chromatographic studies carried out using mobile phaseTolune : ethyl acetate : Glacial Acetic acid 7 : 3 : 1.Three bands were observed at different Rf value as described above.
So, it was found that the chromatographic profile of all 3 samples were identical.and the 3 samples are of same herb.

References-

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