

NOTE

Standardization of Seeds of *Cichorium intybus* Linn.

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Seeds of *Cichorium intybus* Linn. are tonic to the brain, alexiteric, appetizer and useful in headache, ophthalmia, biliousness, lumbago, troubles of the spleen and asthma. The present work attempts to summarize the pharmacognostical characters of the seed.

Key Words: *Cichorium intybus*.

Cichorium intybus Linn. (fam. Compositae) is locally known as Kasni. It is an erect perennial herb and cultivated throughout India, also grows wild in Punjab, northwest India and Hyderabad in areas up to 1,800 m elevation. The seeds are reported to be carminative and cordial. A decoction is used in obstructed menstruation and for checking bilious vomiting¹⁻³.

The present investigation was undertaken to standardize the seeds of *Cichorium intybus* by carrying out various pharmacognostical characteristics for prevention of adulterants in Ayurvedic formulation.

The seeds of *Cichorium intybus* were procured locally from Modinagar market and were identified by Dr. H.B. Naithani, Botanist and Scientist, Forest Tree Seed Laboratory, Silviculture Division, Forest Research Institute, Dehradun.

The morphological characters (colour, odour, size, shape, surface and taste) of the seeds were observed. Foreign organic matter, loss on drying, ash values, extractive values and other physical parameters were determined by pharmacopoeal methods⁴. The behaviour of the powdered seeds with different chemical reagents and fluorescence characters of the alcoholic extract under UV radiation (254 and 366 nm) were also observed. The petroleum ether, ethanol and distilled water extracts were subjected to various chemical tests for the identification of phytoconstituents⁵ and ethanolic extract was subjected to thin layer chromatography⁶.

Observation

Seeds are rough, oval in shape, bland in taste, odourless and light brown to pale brown in colour, having a size of about 3–4 mm long and 2–3 mm wide.

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Physical constant values

Foreign organic matter: 0.67%; Loss on drying: 9.11%; Total ash: 13.03%; Acid-insoluble ash: 1.90%; Sulphated ash: 12.33%; Water-soluble ash: 2.61%; Ethanol-soluble extractive: 1.04%; Water-soluble extractive: 2.25%; Petroleum ether-soluble extractive: 4.18%; Chloroform-soluble extractive: 0.98%; Volatile oil content: Nil; Fluorescent analysis: Very faint fluorescence in short and long UV light.

Cell contents

Fat and oil present in the form of globules in the thin-walled cells of the seed; when treated with conc. HCl fat globules are liberated.

Behaviour of powdered seed with different reagents

- Water and 5% KOH – Powder settles at the bottom producing light greyish brown coloured turbid solution.
- Dil. HCl, dil. H₂SO₄ and dil. HNO₃ – Powder settles at the bottom producing clear solution.
- FeCl₃ soln. and Dragendorff's soln. – Powder settles at the bottom. Some powder floats producing clear orange liquid.
- KI and I₂ soln. – Powder settles at the bottom producing reddish brown clear liquid.

Preliminary phytochemical analysis: Qualitative examination of the various solvent extracts of seeds revealed the presence of fixed oil and fat, carbohydrates, proteins, tannins and sterols and absence of alkaloids and saponins.

Thin-layer chromatography: Seeds powder (140 g) was extracted with ethyl alcohol in a Soxhlet extractor for 18 h and concentrated under reduced pressure at low temperature (45–50°C). The extract was subjected to thin-layer chromatography using TLC aluminium sheets (Merck), previously activated by heating at 110°C for 30 min. Several solvent systems were tried. The best separation was achieved by the solvent system chloroform : methanol : formamide (80 : 19 : 1) for half an hour, drying in an oven at 110°C for 15 min, seen in UV light and then sprayed with Liebermann-Burchard reagent, Molisch's reagent and with sulphuric acid, separately. Observations are given in Table-1.

Three spots (R_f 0.83, 0.86 and 0.90) gave positive Liebermann-Burchard test and other three spots having the R_f values 0.36, 0.05 and 0.00 showed pale blue, pale blue and green fluorescence, respectively in UV light, gave positive Molisch's test.

The phytochemical tests indicated the presence of fixed oil and fat and sterols in petroleum ether extract; carbohydrates, sterols, tannins and proteins in ethanolic extract; and carbohydrates, tannins and proteins in distilled water extract. Chromatography study shows the presence of three different types of sterols and sugars in ethanolic extract.

TABLE-1
TLC OF ALCOHOLIC EXTRACT OF SEEDS OF *CICHORIUM INTYBUS*
AND RESULTS OBTAINED BY DIFFERENT REAGENTS

| S.No. of spots | R _f values | UV light | Sulphuric acid | Liebermann-Burchard reagent | Molisch's reagent |
|----------------|-----------------------|-----------|---------------------------------------|-----------------------------|-------------------|
| 1 | 0.98 | — | Violet-blue | - | - |
| 2 | 0.90 | — | Violet | + | - |
| 3 | 0.86 | — | Blue | + | - |
| 4 | 0.83 | — | Purple | + | - |
| 5 | 0.73 | Violet | — | - | - |
| 6 | 0.66 | — | Red | - | - |
| 7 | 0.60 | — | Blue | - | - |
| 8 | 0.47 | — | Pale violet | - | - |
| 9 | 0.36 | Pale blue | } Dirty green with violet tinge | - | + |
| 10 | 0.05 | Pale blue | | - | + |
| 11 | Zero | Green | | - | + |

The present study can help in authenticating the seeds prior to Ayurvedic formulation.

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