International Journal of Recent Biotechnology **ISSN: 2322 – 0392**
Available online at www.ijrbp.com *Int. J. Rec. Biotech.* **2015,** 3 (4): 1-4
Research Article

IJRB

Standardization & Quality Control of *Crinum defixum* -Leaf

Anil Kumar Verma[1], Alok Kumar[2], Ravindra Singh[3] and Manoj Tripathi[4]*
[1,3]Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya Chitrakoot, Satna (M.P.)
[4]Arogyadham (J.R.D.Tata Foundation for Research in Ayurveda & Yoga Sciences)
Deendayal Research Institute Chitrakoot, Satna, (M.P.)
*Corresponding Author Email: trimanoj391@gmail.com

ABSTRACT

Crinum defixum Ker-Gawl. known as Sudarshan in Hindi and Chakrangi in Sanskrit is an important medicinal plant belonging to family-Amaryllidaceae. It is a promising drug used commonly as ear pain and also useful in fever, skin diseases, leprosy, asthma, blood purification, arthritis, joint pain, soiling and anti bacterial agents. Its leaves are being used in the Indian System of Medicine and preparation of the Ayurvedic formulations. The present paper deals with pharmacognostic study of leaf which mainly included macroscopic, microscopic, study, physico-chemical investigation, phyto-chemical analysis, TLC finger printing and microbial screening helped in laying down standardization and pharmacopoeial parameters.

Key words: *Crinum defixum, Standardization, Microbial screening, Quality control, Phyto-chemical analysis*

INTRODUCTION

Crinum defixum, Linn. (family-Amaryllidaceae) known as Sudarshan herbs is an important medicinal plant. It is a herbs, bulb globose, 120-150cm long. Leaves- numerous, broadly oblong, lorate, 15-40 cm long, bright green, obtuse at apex, glabrous, coriaceous. Flowers white with pinkish tinge, fragrant, in 8-10, rarely 20 flowered umbels, on 15-20 cm long stalk. Perianth infundibuliform, lobes oblong-lanceolate, up to 10 cm long, tube 7-10 cm long. Fruits bulbous 4.5 cm across. And found along streams in open places, also introduced in the gardens and parks.[1][2] The study provides taxonomical identification, pharmacognostical, physicochemical, TLC finger printing and microbiological details helped in laying down standardization and pharmacopoeial parameters.

Since no enough record on the pharmacognostical works on the leaf of this drug plant. The same has been attempted. The present paper deal with mainly botanical identification, macroscopic, microscopic study of the leaf along with other important Physico - chemical parameters such as loss on drying at 105^0C, total ash value, acid in soluble ash value, water soluble ash value, alcohol soluble extractive values and water soluble extractive value. Important phyto-chemical tests, and thin layer chromatographic findings from the standardization point of view. These data will be helpful in identification, quality control and pharmacognostic studies of the drugs.

MATERIAL AND METHODS

Authentic samples were collected from Chitrakoot (Bagdara ghati) forest. The standardization parameters were determined according to the methods detailed in the Ayurvedic Pharmacopoeia of India. [3][4][5] Organoleptic characters and particle size of the

both samples were recorded. Quantitative analysis for loss on drying at 105°C, ethanol soluble extractive value, water soluble extractive value, total ash value, acid insoluble ash values and water soluble ash values were carried out in triplicate of *Crinum defixum* leaf curna.[6][7][8] Preliminary phytochemical analysis and HPTLC finger printing profile were also determined in the samples. For microscopic analysis preparing two slides, one in water, stained with iodine and mounted in glycerin and second one in Chloral hydrate mounted with glycerin. Preliminary tests were carried out on ethanolic and water extract for the presence-absence of phyto-constituents like alkaloids, flavanoids, tannins, resins, carbohydrates, proteins and saponins[9][10][11].

For HPTLC, the powdered leaves 5 gm of sample was extracted with 100 ml of ethanol overnight, filtered and concentrated. It was applied by spotting extracted sample on pre-coated silica-gel aluminium plate 60 F_{254} (5x10 cm with 0.2 mm layer thickness Merk Germany) using Camag Linomat -5 sample applicator and a 100 µl Hamilton syringe. The samples, in the form of bands of length 6 mm, were spotted 15 mm from the bottom, 15 mm from left margin the plate and 10 mm part. Plates were developed using mobile phase consisting of *Toluene: Ethyl acetate* (7:3 v\v). Linear ascending development was carried out in 10x10cm twin through glass chamber equilibrated with mobile phase. The optimized chamber saturation time for mobile phase was 30 min. at room temperature. The length of chromatogram run was 10 cm. 20 ml of the mobile phase. Subsequent to the development, TLC plates was dried with the help of Hot Air Oven. The peak area for samples were recorded with Camera photo documentation system Camag Reprostar 3. Visualization of spot was made before and after derivatization (with 5% methanolic –sulphuric acid reagent) at 254nm, 366nm and day light with Win cat software and R_f values noted.[12][13].

RESULTS AND DISCUSSION

Macroscopic characters:

Sudarshan leaves taste is bitter, odour, astringent, and greenish yellow colour, leaves many 2.4 fits long, 3-4 inch wide and grew from land. **(Fig.1)**

Microscopic characters:

Sudarshan leaves powder shows, spiral thickening, fibres, round to oval starch grains, unicellular trichomes, paracytic stomata, prismatic crystals of calcium oxalate, spongy parenchymatous cell and thick cuticle. **(Fig.2)**

Physico-chemical study:

Detailed study of the powder of the leaf pertaining to physico-chemical parameters such as moisture content (loss on drying at 105^{0}C), water soluble extractive value, alcohol soluble extractive value, total ash value, acid insoluble ash value and water soluble ash value have been given in **(Table-1**). Drug was tested qualitatively for presence or absence of various chemical constituent and found resin, saponin and tannin are present.

High Performance Thin Layer Chromatography (HPTLC):

Ethanolic extract showed major spots before derivatization under UV light R_f Values are 0.54 (yellowish green), 0.72 (light yellow), 0.77 (light black), 0.88 (light green); (**Fig.3**) under 366 nm R_f Values are 0.08 (pink), 0.19 (reddish pink), 0.26 (sky blue), 0.74 (light blue), 0.83 (dark pink), 0.90 (yellowish pink) (**Fig.4**) and after derivatization under 366 nm R_f Values are 0.05 (pink), 0.57 (white), 0.66 (white), 0.82 (red) and 0.96 (red). **(Fig.5)**

TABLE-1: Physico-chemical Analysis

Name of Test	Result
Foreign matter	2.18 %
Loss on drying (LOD)	6.08 %
Alcohol Soluble extractive	15.48 %
Water Soluble extractive	19.20 %
Total ash	8.35 %
Acid in soluble ash	1.26 %
Water soluble ash	4.59 %

Fig.1: Whole plant of Sudarshan

Fig.2: Microscopic characters

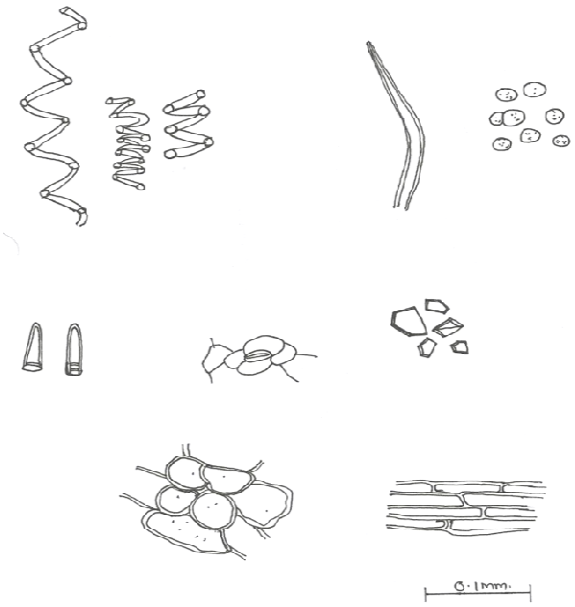
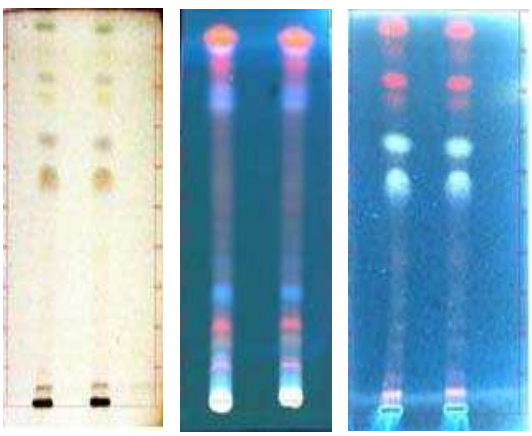


Fig.3:245nm **Fig.4: 366nm** **Fig.5 : 366nm (AD)**



CONCLUSION

Crude drug is the base material for manufacturing herbal medicines. Efficacy of any drug depends on the genuineness of the raw material used for its preparation. Adulteration of the genuine raw material is the main cause for deterioration of the desired therapeutic effect of a particular drug. The present pharmacognostic study on two different sample of *Crinum latifolium* leaves following a series of physico chemical parameters such as *Total Ash, Water Soluble Ash, Acid In-Soluble Ash, Ethanol Soluble Extractive Value, Water Soluble Extractive Value And Loss On Drying* on 105^{o}C, preliminary phytochemical characteristics, HPTLC profile, Microbial screening and Microscopic identification indicates that still is potent & authentic as it was thousands years ago. So it can be concluded that these parameters can be used for quality evaluation of single drug and for manufacturing authentic polyherbal medicines with correct identity.

Acknowledgement

The authors are grateful to Shri Abhay Mahajan, Organizing Secretary Deendayal Research Institute, Chitrakoot, Satna (M.P.) for providing necessary facilities to complete this work.

REFERENCE

1. Singh N.P., Khanna K.K., Mudgal V. and Dixit R.D, Flora of Madhya Pradesh, botanical survey of India, ministry of Environment and Forests Govt. of India Vol.—III, 2001.
2. Sharma, P.V. Dravyaguna Vijnana, Chaukhambha Bharati Academy, Varanasi India Vol- II, 2009.
3. Anonymous. The Ayurvedic Pharmacopoeia of India, Part-I, Volume-5, First Edition, Government of India, ministry of health and family welfare Deptt. Of Indian System of medicine and Homoeopathy, New Delh 2008.
4. Anonymous. Thin Layer Chromatographic Atlas of Ayurvedic Pharmacopoeial Drugs Part-I, Volume-I, First Edition, Government

of India, ministry of health and family welfare Deptt. of Indian System of medicine and Homoeopathy, New Delhi, 2009.

5. Anonymous, Training manual for GMP and Quality Control of Herbal Drugs, prepared in collaboration with National Botanical Research Institute Lucknow, Mahatma Gandhi Institute for Rural Industrialization Maganwadi, Wardha 2002
6. Protocol for testing of Ayurvedic, Siddha & Unani Medicines. Government of India, Department of Ayush, PLIM, Ghaziabad 2001.
7. Anonymous (2004), Who guidelines on safety monitoring of Herbal medicines in pharmacovigialance system, Geneva, World Health Organization **2004,** 4 : 114.
8. Tripathi Manoj and Sikarwar, R.L.S. Pharmacognostic Standardization of stem bark of *Erythrina variegate* L. Journal of the. Indian Botanical Society, **2014**, 93(3&4): 248-253.
9. Tripathi Manoj and Sikarwar R.L.S. Pharmacognostic Studies on Plaksa (*Ficus virens* Ait.) Stem Bark Indian Journal of Natural Products and Resources **2015,** 6(1) : 27-32.
10. Tiwari Ashok, Tripathi Manoj and Dwivedi Neelesh. Standardization of Ayurvedic compound formulation Kutajastaka Kvatha Curna, J. Trop. Med. Plants **2015** (15): 1-13.
11. Tripathi Manoj, Shivhare Deepti, Tiwari Aakanksha, Ahirwar Pawan and Pathak Sourabh. Pharmacognostical evaluation *of Marsdenia tenacissima* Wight. and Arn. Root. *International Journal of Recent Biotechnology*, **2014,** 2(3) :18-23.
12. Rajput S, Tripathi MK**,** Tiwari AK, Dwivedi N & Tripathi SP. Scientific evaluation of Panchkola curna- An Ayurvedic polyherbal drug formulation. *Indian Journal of Traditional Knowledge* **2012,** 11(4): 697-703.
13. Tiwari Ashok, Tripathi Manoj**,** Dwivedi Neelesh, Shukla Pushpendra, Jaiswal Anil, Mishra Ritu & Tripathi Sharda. Evaluation of Ayurvedic Compound Formulation-Vidangadi Churna. *Journal of Ayurveda*, **2013,** 7(3): 111-117.

