

POTENTIAL OF MEDICINAL HERB: *TAGETES ERECTUS*

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Abstract:

The study is aimed to provide rationalization to the Traditional claims of the *Tagetes erectus* leaf by phytochemical assessment and to investigate the active principle present in *Tagetes erectus* (*compositae*) commonly known as *Marigold* is an important plant which used to treat various diseases like Epilepsy, wound healing, anti-inflammatory, anemia, etc. in indigenous system of medicine. Literature survey of the plant, *Tagetes erectus* revealed that the standardization, phytochemical study, and microscopic evaluation of the leaf part was not explored in depth, thus it was thought worthwhile to take up the work for its proper authentication and identification of the plant. Thus the present work embodies the investigations carried out to establish methods for quality control of drug, complete botanical evaluation which comprises macroscopic, microscopic, physicochemical parameters like Ash value, Loss on drying, Extractive value to determine the active phytoconstituents present in the extract. Thin Layer Chromatography, Total Phenolic Contents were also carried out for the investigation of active constituents and quality control of the drug.

Key words: *Tagetes erectus*, *Marigold*, Thin layer chromatography, Potential

Introduction:

Herbal medicines originated from the ancient use of wild plants. Today, with the possibility of carefully controlling the cultivation of medicinal plants and even improving them genetically, it is possible to develop and market a wide variety and quality of herbal drugs of consistent chemical composition and excellent quality to treat various diseases. One of the important constituent of *Tagetes erectus* may possess that quality.¹

Tagetes erectus belong to the family *Compositae*. It is a small shrub; the plant grows upto a height of 1-3 feet and spreads about 0.5-1 feet. The leaf is arranged in opposite to subopposite with pinnately compound leaf. Margin is denate with oblong in shape bears green in colour with a blade length less than 2 inch. The leaves are 4 to 11cm long and very deeply pinnatifid, with the lobes lanceolate, coarsely and sharply toothed, and 1 to 2.5cm long, the flowers are pale to deep yellow.²

The leaves are used in kidney troubles and in muscular pains and are applied on boils and carbuncle. In Unani medicine, a

confection of tender leaves and purified sugar is prescribed in anuria, retention of urine and kidney troubles ². The flowers contain pigments as Quercetagenin and quercetagenin. Phytochemical investigation of leaf shows presence of Flavonoids, glycosides, phenols, tannins, and steroids.

Material and methods:

Plant material:

The leaves of *Tagetes erectus* were collected from the wild sources of Shirpur forest, and it was identified and authenticated by Dr. Sagar Kshirsagar, Dept. of Botany, SSVPS, College of science, Dhulia. A voucher specimen is placed in the Dept. of Pharmacognosy for further reference. The collected plants were washed, dried and were pulverized with the help of mechanical grinder and was passed through sieve no 40, and stored in closed vessels for future use. The fresh leaves were used for Microscopy Identification.

Pharmacognostic Studies:

Morphological Studies were carried out by using simple determination technique, the shape, size, color, odour, margin and apex. Apex of the leaf .Microscopic Studies were carried out by preparing of thin hand section of leaf. The sections were cleared with alcohol and stained as per the Protocol. Histochemical reaction were applied with Concentrated Hydrochloric Acid and Phloroglucinol and were mounted in Glycerin for identification of Lignified Elements, Iodine Solution for Identification of Starch Grains, 60% Sulphuric Acid for Calcium Oxalate Crystals in the powdered leaf by reported methods ^{3,4}.

Physico chemical parameters:

The parameter was done to evaluate the percentage of total ash, water soluble acid insoluble ash were calculated as per Indian Pharmacopoeia³. The extract of the powdered leaves were prepared with the different solvents for the study of extractive value. Fluorescence analysis was also carried out for the powder as well as different extracts.

Powder analysis:

Preliminary analysis of the powder of leaf of *Tagetes erectus* were carried out with different chemical reagents^{5,6}.

Preliminary phytochemical analysis:

For the Preliminary phytochemical analysis, the extract was prepared by weighing 100gm of dried powdered leaf and were subjected to maceration with different solvents as per the Polarity, Ethanol, Hydro-alcoholic, and finally with Aqueous. The extracts were filtered in each step, concentrated, and the solvent was removed by rotary evaporator. The extracts were dried over desiccator and the residues were weighed. The presence and absence of the primary and secondary phytoconstituents was detected by usual prescribed methods.^{5,7}

Result and Discussion:

Macroscopic Characters of Leaf:

The transverse section of the leaf showed following characters. The leaf is generally dorsiventral in nature and it consisted of two major regions namely the Lamina region and Midrib. The lamina region consisting of upper and lower epidermis, spongy mesophyll region, which consisting of palisade cells and few crystals of calcium oxalate. The midrib region consisted by

xylem and phloem. At the lower portion collenchyma cells which were completely arranged, above that loosely packed parenchyma cells were observed.

Powder Microcopy:

The green colored powder was used for the study. The powder was stained with phloroglucinol and concentrated hydrochloric acid. It was mounted in glycerin and examined under 10 X and then magnified with 40 X. On microscopical examination it showed prism shaped calcium oxalate crystals. Trichomes were unicellular and uniseriate covering, vessels were spiral in nature, starch grains were spherical in nature, and fibres were long, slender and non-lignified in nature.

Fluorescence Analysis:

The powder drug and extracts were subjected to fluorescence analysis as per the standard procedure.

Physicochemical Parameters:

The powdered drug was evaluated for its physic-chemical parameters like Ash values: Acid Insoluble ash, water soluble ash, water insoluble ash, extractive values (Alcohol and water soluble values) and loss on drying.

Preliminary Phytochemical Analysis:

The Alcoholic and Aqueous extract was subjected to preliminary phytochemical analysis for their presence of the constituents. It showed the presence of Flavonoids, tannins, phenols and glycosides.

Conclusion:

Now a days the standardization of crude drugs has very important for identification and authentication of crude drug, but due to

certain obstructs the importance was not up to the mark.

Hence, lack of Standardization technique fails to identify the drug from its originality which there by exploits the usage of drug from its Traditional System of medicine. The plant *Tagetes erectus* is used widely for curing various diseases and gives a helping hand to the Humans. Thus a perfect protocol was designed for its Authentication and identification on the basis of Microscopy and chemical analysis. Thus the present investigation was aimed and the results were found to be significant and encouraging towards the goal for Standardization.

Acknowledgement:

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Table 1 – Fluorescence analysis of powder and extract

Sr.No	Drug	Visible(400nm)	ShortUV(256nm)	LongUV(365nm)
1	Powder	Green	Dark Green	Black
2	Powder + Water	Green	Dark Green	Black
3	Powder + Conc.HCL	Dark green	Blackish green	Black
4	Powder + Conc.H ₂ SO ₄	Dark brown	Blackish green	Black
5	Powder + Conc.HNO ₃	Light brown	Green	Black
6	Powder + NaOH	Brown	Dark Green	Black
7	Powder + Acetone	Green	Dark Green	Black
8	Powder +Methanol	Green	Dark Green	Black

Table 2 – Results of Physicochemical Parameters

Sr. No	Standardization Parameters	Results
1	Total Ash	18% w/w
2	Acid Insoluble Ash	6.5% w/v
3	Acid Soluble Ash	11.5% w/v
4	Water Insoluble Ash	15.5% w/v
5	Water Soluble Ash	2.5% w/v
6	Water soluble Extractive value	8.2% w/v
7	Alcohol soluble Extractive value	11.2% w/v
8	Loss on drying	9.33% w/w

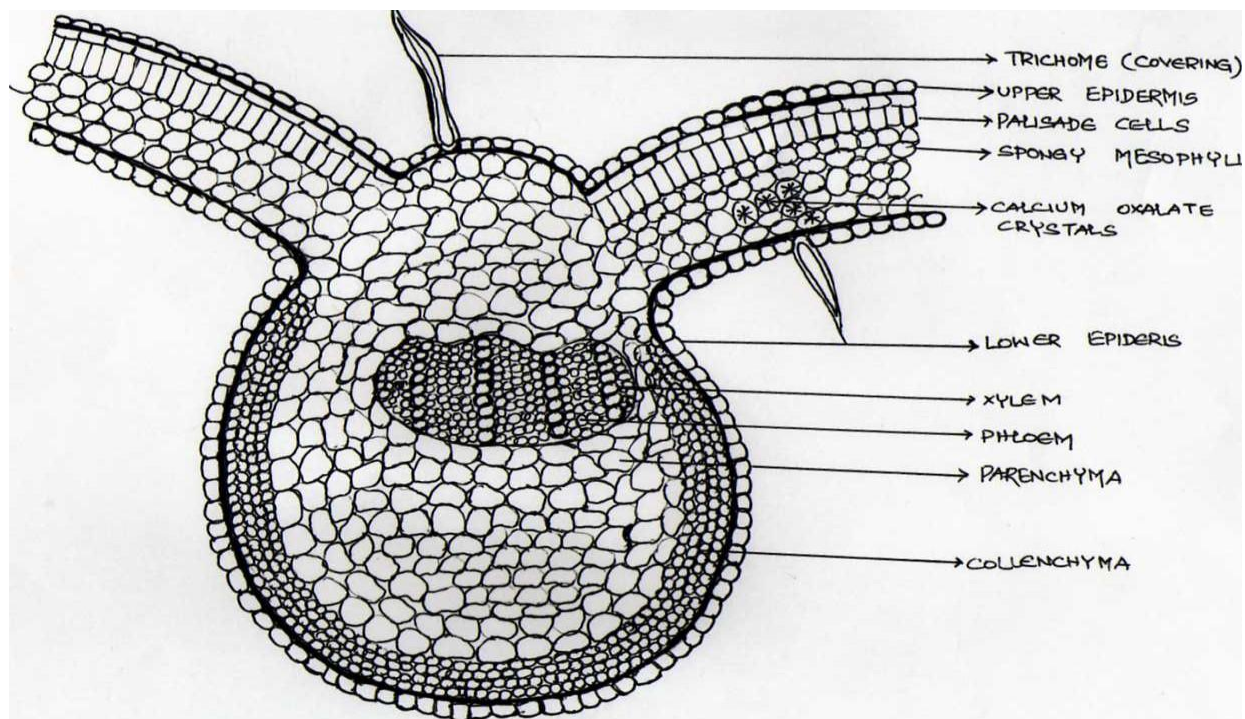


Figure 1 – Transverse section of leaf of *Tagetes erectus*

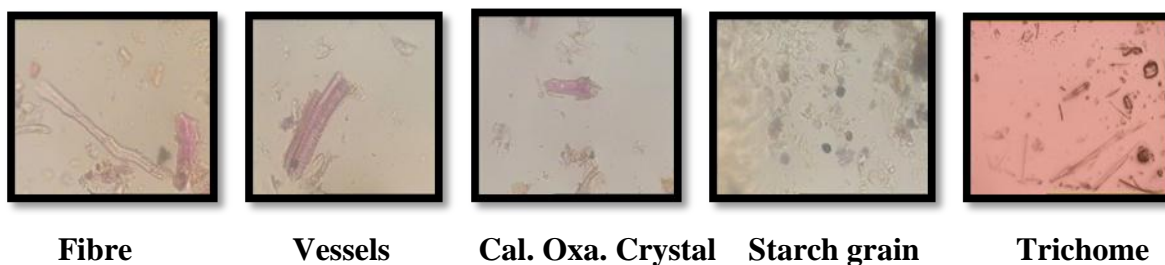


Figure 2 – Powder characteristics of *Tagetes erectus* leaf