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Scientific validation of *Kalanchoe integra* (Medik.) Kuntze (Crassulaceae) leaves used as ethno-medicine made by Kokna Tribe of Kalwan Tehsil district Nasik (M.S) India

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Abstract
Many claims regarding the effective use of plants as medicine against different diseases have been made by traditional practitioners. The said claim is not always true, at the same time much of this knowledge has been passed from generation to generation so the question of validating the claims becomes important. The final proof would be the presence of such chemicals which are scientifically proven to be effective against the particular disease. *Kalanchoe integra* (Medik) Kuntze is one such plant used by Kokna tribe for curing Arthritis and respiratory disorders. The present paper deals with phyto-chemical analysis of the plant material and validating the claims regarding the medicinal properties of *Kalanchoe integra* (Medik.) Kuntze used in ethno-medicines by the Kokna tribe from Kalwan Tehsil District Nashik.

Keywords: validation, ethno medicines, kokna tribe kalanchoe integra (Medik.) Kuntze

Introduction
A large number of plants are being used by numerous ethnic communities the world over as well is India. Though efforts have been taken to record this traditional knowledge and investigate the claims made therein, a fairly large amount of the knowledge remains undocumented and is being transferred from one generation to another generation without validation. It is in this context it becomes necessary to document the ethno botanical knowledge and validate the claims regarding the use of the plants or plant parts in curing various diseases. The end result would throw light on whether the knowledge being inherited is result oriented or otherwise.
Plants owe their medicinal properties to the various phyto-chemicals present in their plant parts or exudates. These phyto-chemicals are found to be effective either singly or collectively against a particular disorder or disease. It is quite obvious that if an ethno-medicine containing preparation made by using plant parts, they should contain the particular phyto-chemical known to be effective against that disease. Thus validating the claim.

Material and Method
Field Survey
Ethno-botanical surveys were carried out between 26thMarch 2018 to 25th February 2022, in Kalwan tehsil of Nashik District M.S India. The information regarding the use of various plants and plant parts used to cure different disorders and diseases was collected by using Questionnaire (Jain *et al* 1990). Given to the Bhagats/Vaids and elders of tribal community.

Selection and collection of Plant
The plant material was collected during the field visits carried out at Mohandar forest Kalwan tehsil. The particular plant *Kalanchoe integra* (Medik.) Kuntze was collected based on the information given by the Bhagats who use this plant in traditional medicine to cure Arthritis, respiratory diseases and muscle swelling. The plant species was identified and authenticated at the Department of Botany MVP'S K.S.K.W. College CIDCO Nashik.

Cleaning of Plant material
The plant material has to be properly cleaned after collection in order to remove soil and foreign material. Cleaning should be done manually and usually involves following steps-Cleaning, washing, and Striping of leaves.

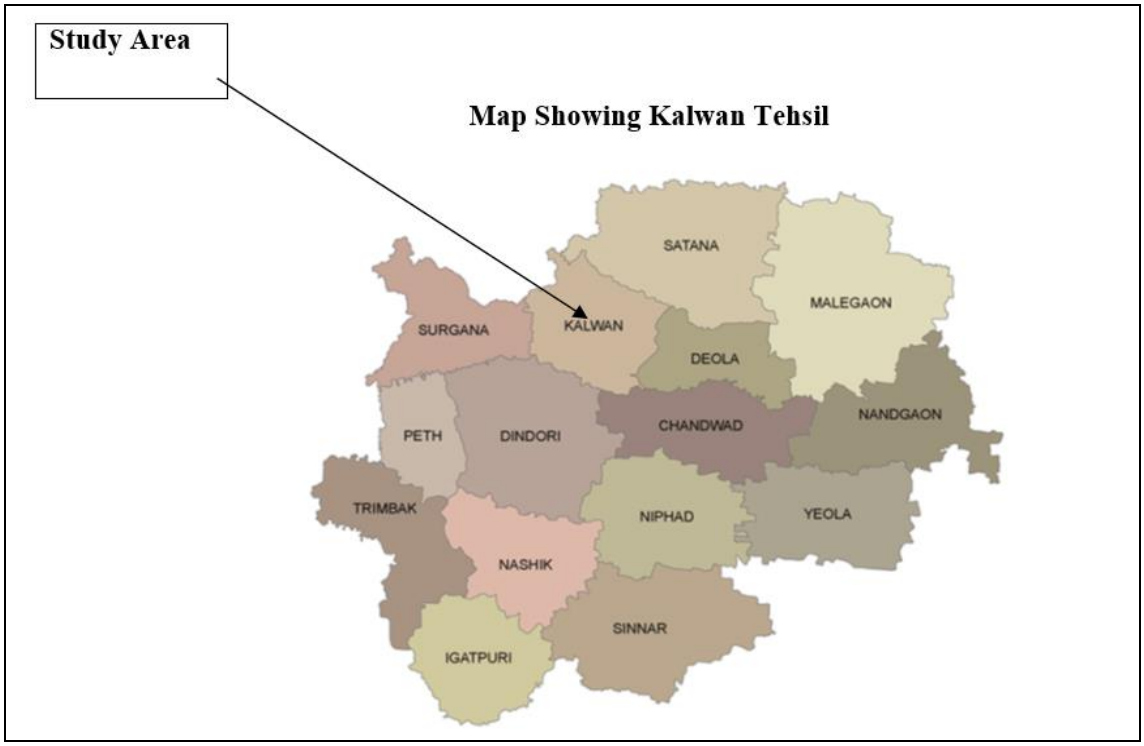

Fig 1

Drying

Drying is done in order to remove moisture from the plant material and it has to be done immediately after collecting the plant material to prevent deterioration of the plant material. Out of the two methods used for drying, Natural drying (shade drying) method has been followed in this study.

Powdering: The plant material was mechanically powdered and kept in air tight containers for phyto-chemical analysis.

Preparing Plant extracts: Solvent extracts were prepared employing percolation method. 5mg of the powdered material was macerated in the solvent and then refrigerated for twelve hours. The sample was then filtered and residue was macerated in the same solvent which was used first. This process was repeated for each of the different solvents used. Solvents used were Ethanol, Petroleum ether, Chloroform, Acetone, and Water. For Aqueous extract the powder was distilled in water and then filtered. The filtrate was dried to get a semisolid mass.

Phytochemical test

Test for Alkaloids

a. Mayer's Test: Two drops of Mayer's reagent were addedto few ml of plant extract along the sides of the tube. Appearance of creamy white precipitate indicates presence of alkaloids.

b. Wagner's test: A few drops of Wagner's reagent were added to few ml of plant extract along the sides of the tube. Appearance of reddish brown precipitate indicates presence of alkaloids.

Test for Carbohydrates

A. Molish'stest

Two drops of alcoholic solution of α- Naphthol solution is added to 2 ml of plant extract. This mixture is shaken well and a few drops of concentrated H_2SO_4 are added gently along the sides of the test tube. Formation of violet ring indicates presence of Carbohydrates.

B. Benedict's test

0.5 ml of Benedict's reagent is added to 0.5 ml of filtrate. This mixture is heated on boiling water bath for 2 minutes. A characteristic coloured precipitate indicates the presence of sugar.

Test for Saponin

5ml of extract was dehydrated and 1 ml of ethyl alcohol was added to it. Later Ethyl alcohol was removed and distilled water was added with vigorous shaking If foam is formed and it persists for 15 minutes it indicates presence of Saponin.

Test for Flavonoids
A small quantity of leaf extract was dissolved with 10%NaOH. To which few drops of HCL was added. Change of colour from yellow to colourless indicates presence of Flavanoids.

Test for Terpenoids
A drop of sulphuric acid was added to the mixture of 1 ml extract and 400 µl chloroform. Appearance of reddish brown interface is indicates presence of terpenoids.

Test of Phenols
Alcohol is added to 2 ml of crude extract after which a few drops of ferric chloride solution is added Violet or blue coloration shows presence of phenol.

Test for Tannin
A mixture of 50 ml distilled water and 0.7 ml extract was heated for ten minutes. After cooling few drops of 1% ferric chloride was added. If the colour changes from yellow to green and a dark green precipitate areformed, indicates presence of tannins.

Test for Mucilage
100ml extract is dissolved in 10 ml of distilled water, to this 2 ml absolute alcohol is added with constant stirring. Formation of white precipitate is indicative of presence of mucilage.

Test for Proteins
100mg extract is dissolved in 10 ml of distilled water and filtered through Whatmann filter paper no 1. The filtrate is used for protein test.

a. Few drops of Millions reagent is added to 2 ml of filtrate. Presence of proteins is indicated by white precipitate.
b. Biuret test

One drop of 2% copper sulphate solution is added to 2 ml filtrate. To this 1 mp of 95% ethanol is added, followed by excess amount of potassium hydroxide pellets. Formation of pink coloured ethanol layer indicates presence of proteins.

Table 1: Results of Preliminary Phyto-chemical investigation of *Kalanchoe integra* (Medik.) Kuntze Leaves

Phytoconstituents	Extract				
	Petroleum Ether	Chloroform	Acetone	Ethanol	Water
Carbohydrates	--	--	--	--	++
Proteins	--	--	--	++	++
Mucilage	--	--	--	+-	+-
Alkaloids	--	--	--	--	--
Steroids	++	--	--	--	--
Phenols	--	--	+-	+-	+
Terpenoids	--	+-	--	--	--
Flavonoids	--	--	--	+-	--
Saponins	--	--	--	--	--
Tannin	--	--	+-	--	--

-- Absent, +- moderately present, ++ Present

Results and Discussions
It is evident from the table that the leaves of *Kalanchoe integra* (Medik.) Kuntze contains carbohydrates, proteins and steroids, whereas Tannins, flavonoids, Terpenoids, Phenols and mucilage are present moderately. According to the information provided by the bhagats and common people the leaves of *Kalanchoe integra* (Medik.) Kuntze is administered in case of Arthritis, and respiratory diseases and muscle swelling. From the literature it is clear that Steroids are effective in treating the above conditions, the presence of Steroids in leaves of *Kalanchoe integra* (Medik.) Kuntze validate the effectiveness of using of *Kalanchoe integra (Medik.) Kuntz e* leaves in treating Arthritis, and respiratory diseases and muscle swelling.

References
1. Abdul W Wadood *et al*. Phytochemical Analysis of Medicinal Plants Occurring in Local Area of Mardan Biochem *Anal Biochem*,2013:2:4
2. Akash Tariq, Sakina Mussarat, *et al*, Ethnomedicinal Evaluation of Medicinal Plants Used against Gastrointestinal Complaints BioMed Research International, 2015.
3. Bimala Subba*, Mahesh Prasad Timilsina Scientific Validation of some Nepalese Medicinal plants from Nangle Bhare of Kathmandu, Nepal Asian J Pharm Clin Res, 2019, 12(2).

4. Joanna Kolodziejczyk-Czepas. Anna Stochmal, Bufadienolides of Kalanchoe species: an Overview of chemical structure, biological activity and prospects for pharmacological use, *Phytochem Rev*,2017:16:1155-1171.
5. Sahira Banu K, Dr. Cathrine L. General Techniques Involved in Phytochemical Analysis, International Journal of Advanced Researchin Chemical Science (IJARCS),2015:2(4):25-32.
6. Rose Shrestha, Astha Shakya, Krishna Kumar Shrestha. Phytochemical screening and Antimicrobial activity of*Asparagus racemosus* willd. And *Asparagus curillus* buch.-ham. Exroxb J. Nat. Hist. Mus,2015:29:91-102.
7. Sanjeet Kumar, Padan Kumar Jena, Monika Kumari, Navyanita Patnaik, Ashok Kumar Nayak, Prakash Kumar Tripathy. "Validation of tribal claims through pharmacological studies of Helicteres isora L. leaf extracts: an Empirical Research" Int. J. Drug Dev. & Res.,2013:5(1):279-285.
8. Sasidharan *et al*. Extraction, Isolation and Characterization of Bioactive Compounds from Plants' Extracts Afr J Tradit Complement Altern Med,2011:8(1):1-10.
9. William Ericson-Neilsen, Alan David Kaye, Steroids: Pharmacology, Complications, and
10. Practice Delivery Issues The Ochsner Journal,*2014:*14:203-207.
11. Lakshminarasimhan P, Sharma BD. Flora of Nasik District Botanical survey of India, 1991.
12. Singh NP. Flora of Maharashtra Volume I Botanical Survey of India, 2001.
13. Santosh Yadav, Dhanke PB. A check list of Plants of Nashik District, Nashik Forest Circle.
14. https://www.flowersofindia.net
15. https://indiabiodiversity.org