Arts & Commerce College, Warwat Bakal
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Sr. No	Title of Paper	Name of Author	Department	Journal	Year	Impact Factor
1	Documentation of Some important ethnomedicinal plants from Jalgaon Jamod Tahsil of Buldhana District, Maharashtra, India	K. B. Theng	Botany	International journal of Applied and advanced Biology	Aug-2023	
2	Isolation of *Curvularia lunata* from Sorghum and evalution of Antagonistic potential against *Trichoderma harzianum*	K. B. Theng	Botany	Global Online Electronic International Interdisciplinary Research Journal (GOEIIRJ)	March-2024	
3	Phytochemical and Pharmacognostic evaluation of *Barleria lupulina* LINDL	K. B. Theng	Botany	Global Online Electronic International Interdisciplinary Research Journal (GOEIIRJ)	March-2024	

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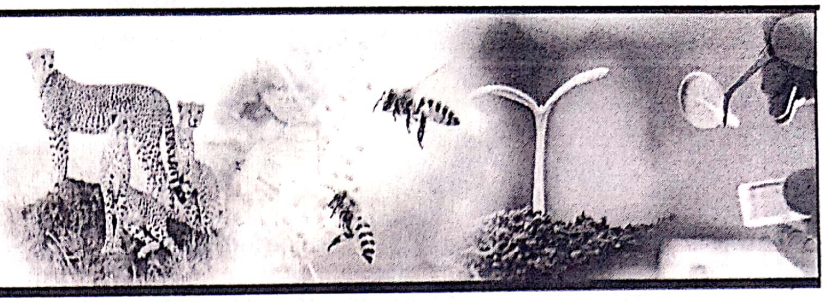

DOCUMENTATION OF SOME IMPORTANT ETHNOMEDICINAL PLANTS FROM JALGAON JAMOD TAHSIL OF BULDHANA DISTRICT, MAHARASHTRA, INDIA.

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ABSTRACT

Present investigation concerns with documentation of Ethanomedicinal plants from local traditional healer, tribal people, forest dwellers, experience person and vaidoos of Jalgaon Jamod tahsil of Buldhana district, Maharashtra. Some plant species found as wild in forest region while some species are cultivated. In present study 40 plants belong to 30 different families utilized by tribal and other local people of this area were included. They consumed various plant parts mostly the leaves and root in health care practices.

Out of listed 40 plants, most belongs to Fabaceae family followed by Mimosaceae, Amaranthaceae, Acanthaceae, Rutaceae, Liliaceae and Nyctaginaceae. Medicinal plants enlisted in present study mostly utilized for curingdysentery, fever, cough, asthma, jaundice, skin infection, diabetes, diarrhea, wound healing, piles and stomach problem. Medicinal plants utilized in study area are arranged alphabetically with their botanical name, common name, family name, parts used and medicinal uses.

Keywords: Ethanomedicinal, Traditional healer, Tribal people, Buldhana, Jalgaon Jamod.

INTRODUCTION

Medicinal plants are utilized by millions of people in underdeveloped countries on regular basis, since act as backbone of traditional medicine (Dobriyal and Narayana, 1998). Herbal medicines are a most common and alternative method of medicine used for the treatment of various forms of ailments in different part of world. This system has a very rare side effect and found most effective against many diseases (Dey *et al.*, 2012). There has been rapid increase of interest in the field of Ethnomedicine due to loss of indigenous plant and need of its documentation, new drug products from Ethanomedicinal plants, focus on research of natural products and as alternative source of medicine (Cox 2005).

About 54 million native people of different tribal groups resides in various part of India with their own cultural, religious values, traditional knowledge about medicine and food habit (Anuradha *etal.*, 1986, Pushpangadan and Atal 1984 and Harsha *et al.*, 2002). During the past century allopathic system of medicinal treatment has a very fast expansion in our country (Dwivedi *et al.*, 2007). People facing the adverse effect of these drugs on large scale and hence focus on utilization of natural products for their safety and efficacy. However herbal drugs have no side effects, easily available, cheaper and safe for use. Ancient folk healers utilized particular plant parts for healing of some kind of diseases and ultimately it helps to discover some valuable drugs (Ekka and Dixit, 2007). Traditional practitioners based on theories, beliefs and experiences used these traditional medicines differently from allopathic medicine to sustain health, prevention and diagnosis and care of physical and mental illnesses (WHO, 2012). Dhole *etal.*, (2021) worked on Ethnomedicinal plants from Amravati district (M.S.) India. They documented 79 ethnomedicinal plants species of 33 different families used by tribal for the treatment of various diseases in Amravati district (M.S.). The rural and tribal people of Buldhana district used traditional medicine on large scale. Jalgaon Jamod tahsil has rich biodiversity with a variety of medicinal plants. Previous work done by Korpenwar (2010) on ethno-botanical diversity of Buldhana district documented 125 medicinal plants. During present study, we focus on collection of ethnomedicinal information from local traditional healer, tribal people, forest dwellers, experience person and vaidoos.

MATERIALS AND METHODS

Present study was conducted in Jalgaon Jamod tahsil of Buldhana district, Maharashtra. Jalgaon Jamod is a small town situated at the base of Satpura ranges near about 10 km away from it. Geographical location of Jalgaon Jamod is represented by coordinates as 21.0486°N to 76.5344°E.

Field survey was conducted in the rural and forest area of Jalgaon Jamod tahsil and information was collected through common interviews and discussion with local traditional healer, tribal people, forest dwellers, experience person and vaidoos.

Subsequent field visits were planned to photograph the plants in proper blooming period. The plants specimens were collected from various places of study area in proper vegetative and blooming conditions. Plants were identified using standard floras like Diwakar and Sharma 2000; Naik, 1998; Singh and Karthikeyan, 2000 and Yadav *et al.*, (2002). Identified and voucher specimens were deposited in herbarium of the Botany Department, Arts and Commerce College Warwat Bakal, Dist. Buldhana (M.S.).

RESULTS AND DISCUSSION

Samudra *et al.*, (2021) highlight on the ethnomedicinal plant diversity and their utilization as resource in conservative practices. They were identified 74 plant species used to cure different diseases due to their medicinal properties. Korpenwar (2012) documented 54 species during

ethnomedicinal studies on plants used by Bhilala tribals in Buldhana district (M.S.). He was concluded the persistence of folk medicine practice in Buldhana district and also revealed that people depend on indigenous knowledge for health care. Gaikwad (2022) found that locally available medicinal plant has medicinal values which help to cure several types of diseases.

Dushing and Patil (2010) carried out studies on Ethnomedicine in Buldhana district of Maharashtra (India). They found that tribal and rural folk have rich tradition of Ethnomedicine. Their study including 48 ethnomedicinal plant species belongs to 47 genera. Patil and Ahirrao (2011) investigated that people of Buldhana district utilized 62 plants species belonging 38 families. Local people most commonly utilized different plant parts such as root, stem-bark and fruit. Basic information obtained from local people is useful in investigation of new molecules for human benefits. The record of different ethnomedicinal plant species used for the treatment of various ailments in study area was recorded in table no. 1. Local people, traditional healer mostly utilized this plant species for curing dysentery, fever, cough, asthma, jaundice, skin infection, diabetes, diarrhea, wound healing, piles, kidney stone and stomach problem.

There are 40 plant species belongs to 30 different families were recorded. Most of the species belongs to Fabaceae (4), 2 species belongs to Mimosaceae, Amaranthaceae, Acanthaceae, Rutaceae, Liliaceae, Nyctaginaceae and Solanaceae while remaining families such as Malvaceae, Papaveraceae, Asparagaceae, Meliaceae, Scrophulariaceae, Burseraceae, Asclepiadaceae, Caesalpinaceae, Celastraceae, Cucurbitaceae, Poaceae, Euphorbiceae, Lamiaceae, Plumbaginaceae, Phyllanthaceae, Apocynaceae, Santalaceae, Menispermaceae, Asteraceae, Zygophyllaceae, Verbeneceae and Rhamnaceae including 1 species each.

Present study is useful for further scientific investigation and preparation of standard crude drugs. Ethnomedicinal data obtained from traditional healers is useful for screening of crude drugs for their chemical constituents and biological activity.

CONCLUSION:

This study revealed that the people of study area are still depends on medicinal plants for healthcare practices. Local traditional healer, tribal people, forest dwellers, experience person and vaidoos has distinctive knowledge about medicinal plants. Documentation of this knowledge is very necessary before their extinction. Present study also recommended further scientific investigation for screening of crude drugs for their chemical constituents and biological activity.

ACKNOWLEDGEMENT

Author is very grateful to traditional healer, vaidoos, local tribes, forest dwellers and experience peoples of Ethnomedicine from Jalgaon Jamod area for sharing their valuable knowledge about medicinal plants and helps in data collection.

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Table 1: List of ethnomedicinal plants from Jalgaon Jamod area, Buldhana district of Maharashtra.

Sr. No.	Botanical Name	Common Name	Family	Part used	Medicinal Uses
1	*Abrus precalorius* L.	Gunj	Fabaceae	Root, seeds	Bronchitis, relief of fever, sore throat.
2	*Abutilon indicum* L	Atibalas	Malvaceae	whole plant, leaves	Dysentery, fever, piles, allergy and jaundice.
3	*Acacia Arabica* L.	Babul	Mimosaceae	Stem, leaf, fruit	Pain, cough, toothache, wound healing.
4	*Acacia catechu* Willd.	Khaira	Mimosaceae	Leaf, stem	Dental and oral problems, swelling, pain.
5	*Achyranthes aspera* Linn.	Aghada	Amaranthaceae	Whole plant, leaves.	Asthma, piles, wounds, pneumonia, stomach disorder.
6	*Adhatodavasica* Medic. Hist.	Adulsa	Acanthaceae	whole plant, leaves	Cough, fever, dysentery, vomiting, and in throat infection.
7	*Aegle marmelos* (L.) Corr.	Bel	Rutaceae	Stem, leaf	Stomach problem, diarrhea, earache and dysentery.
8	*Aloe vera* (L) Burm.	Korphad	Liliaceae	leaf pulp	Skin problem, hair cleaner, and earache.
9	*Andrographis paniculata* Burm.	Bhui-neem	Acanthaceae	whole plant	Dysentery, Stomach problem, fever.
10	*Argemone maxicana* L.	Kateringni	Papaveraceae	Root, latex	Wound healing.
11	*Asparagus racemosus* Willd.	Shatavari	Asparagaceae	Root	Dysentery, diarrhea, cough, bronchitis, increase milk secretion in lactation.
12	*Azadirachta indica* A. Juss.	Kadunimb	Meliaceae	Leaf, stem bark, oil	Wound healing, skin problem, dental problem, Headache, Malaria fever.
13	*Bacopa monnieri* Linn.	Brahmi	Scrophulariaceae	Leaf	Brain tonic, backache, joint pain.
14	*Butea monosperma* (Lamk.) Taub	Palash	Fabaceae	Leaves, Flower, root, seed.	Diarrhea and diabetes.
15	*Boerhaavia diffusa* L.	Punarnava	Nyctaginaceae	Whole plant	Dyspepsia, jaundice, spleen enlargement, abdominal pain.
16	*Boswellia serrata* Roxb.	Dinkya	Burseraceae	Leaves	Asthma, diabetes, headache, pimples.
17	*Calotropis gigantean* L.	Rui	Asclepiadaceae	Latex	Scorpion bite, knee joint problem, injuries.
18	*Cassia fistula* L.	*Amaltas*	Caesalpinaceae	Leaf, Fruit	Earache, skin infection.
19	*Celastrus paniculatus* Willd.	Malkangi	Celastraceae	Seed	Cough, mental disorders, nerve tonic.
20	*Celosia argentea* L.	kurdu	Amaranthaceae	Root, seed	Kidney stone diseases.
21	*Chlorophytum*	Safed moosli	Liliaceae	Root	Health tonic, Aphrodisiac.

	borivilianum Roxb.				
22	*Citrullus colocynthis* schard.	Indrayan	Cucurbitaceae	Fruit, Root	Indigestion, diabetes, asthma.
23	*Clitoriaternatea* L.	Gokarna	Fabaceae	Leaf, Root	Fever, indigestion, brain tonic
24	*Cymbopogon citratus* (DC.) Stapf.	Gavatichaha	Poaceae	Leaves	Cold fever, cough, sore throat, stomach pain.
25	*Datura stramonium* L.	Dhotra	Solanaceae	Seed.	Depression.
26	*Emlica officinalis* Geartn.	Amla	Phyllanthaceae	Fruit, leaves	Burn and injury problem.
27	*Euphorbia hirta* L.	Dhudhi	Euphorbiceae	Root, Flower, fruit	Asthma, wound healing, respiratory disorder.
28	*Feronia elephantum* Correa.	Kavath	Rutaceae	Leaf, Fruit	Vomiting, dysentery, liver tonic, ulcer, indigestion.
29	*Mirabilis jalapa* L.	gulbaksh	Nyctaginaceae	Root	Diarrhea, inflammation, muscle pain, dysentery.
30	*Mucuna pruriens* (L.) DC.	Khaj-kuiri	Fabaceae	Seed, Root	Nervous disease, male sterility problem.
31	*Ocimum sanctum* L.	Tulas	Lamiaceae	Leaves, stem	Cough, toothaches, earaches.
32	*Plumbago zeylanica* L.	Chitrak	Plumbaginaceae	Root	Skin infection, worm diseases, sore throat and diarrhea.
33	*Rauwolfia serpentina* (L.) Benth. ex Kurz	sarpgandha	Apocynaceae	Leaves, seeds.	Mental disorders, snake bites, headache.
34	*Santalum album* L.	Chandan	Santalaceae	Wood, leaves.	Wound healing, shin infection, acne, wrinkle problems.
35	*Solanum virginianum* L.	Bhui-ringani	Solanaceae	Leaves, root.	Cough, headache, hair fall, fever.
36	*Tinospora cordifolia* (Willd.) Miers.	Gulwel	Menispermaceae	Leaves, stem, root.	Fever, eye problems, jaundice, skin diseases, dysentery.
37	*Tridax procumbens* L.	Tantani, Kambarmodi	Asteraceae	Leaves	Cough, stomach pain, diarrhea, cough, wound healing.
38	*Tribulus terrestris* Linn.	Gokharu.	Zygophyllaceae	Fruit, stem.	Kidney stone diseases, urinary disorders.
39	*Vitex negundo* L.	Nirgudi	Verbeneceae	Leaves, fruit	Wound healing, Indigestion, dysentery, skin infection.
40	*Ziziphus jujube* L.	Bor	Rhamnaceae	Root, leaves.	Headache, digestion problem, joint pain.

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ISOLATION OF CURVULARIA LUNATA FROM SORGHUM AND EVALUTION OF ANTAGONISTIC POTENTIAL AGAINST TRICHODERMA HARZIANUM

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Abstract :-

Curvularialunata is one of the fungal pathogens who cause diseases to crop plants. It is responsible for the qualitative and quantitative reduction in the yield of crop. It also reduces the vigour and texture of the grains. Due to its infection and continuous accumulation over a crop plant it may secrete certain mycotoxins in the seeds.Curvularialunata were one of the members of fungi who are responsible for cause of grain mold disease in sorghum. It attack on the sorghum head and destroy its vigour and quality of grains.Present investigation concern with the control of harmful pathogenic fungi Curvularialunatafrom destroying the crops. In this study fungiTrichodermaherzianum were tested against the plant pathogenic fungi Curvularialunata. Trichodermaherzianumshows the antagonistic activity against Curvularialunata and retards its growth. After some days of infection Trichodermaherzianum completely digest the mycelium and spores of Curvularialunata. Minimizes its impact on crop plant and help in the retention of crop yield. This study shows significant reduction in the growth of Curvularialunata due to the activity of Trichodermaharzianum.

Keywords: -*Trichodermaharzianum, Curvularialunata*, antagonistic activity, plant pathogen

Introduction:-

Curvularialunata is a member of grain mold associated fungi. It is responsible for the qualitative and quantitative reduction in the yield of Sorghum. Total yield of sorghum is reducing by grain mold associated fungi as compare to other infections. *Curvularia* majorly responsible for the loss in seed viability and seed vigour. On infected seed samples ofsorghum, more than 19 different species of *Curvularia* were reported in Marathwada region of Maharashtra (Girish et al, 2011). Out of which *Curvularialunata* shows their dominance over other species; in all the infected samples collected from different localities. Hybrid sorghum varieties were more susceptible to grain mold infection as compare to other species. While in Rajasthan,*Curvularialunata* were reported on 151 samples out of 161 samples collected and isolated. Total percent if incidence of *Curvularialunata* were 93.78% as compared to other fungal incidence(Rastogi et al, 1990). Visual symptoms were observed on sorghum seeds in the form of

black discoloration and mycelial net present over seed.

Seed germination and seed viability also reduced due the impact of *Curvularialunata* in sorghum. In artificial infestation of *Curvularialunata* on different sorghumcultivers reduces the germination percentage (Prom et al, 2003).Colonies on grain appears as gray, brown or black hairy, cottony cushion like loosely attached mat present on the periphery of seeds. It is primary identification on the basis of visual appearance (Navi et al, 1999).While hybrid sorghum cultivers also shows the infection of *Curvularialunata* in Marathwada region of Maharashtra (Panchal and Dhale, 2011). Infection of *Curvularialunata* to sorghum was prominent at physiological maturity as compare to other developmental stages. At the flowering and milky stage the intensity of *Curvularial* infection was quite low (Navi et al, 2005). At the time of Physiological maturity when the moist conditions were appeared maximum infection were recorded in grain sorghum.

Different techniques were implemented for the control of fungal pathogens from attacking the crop. Integrated pest management, Leaf extract of various plants, Chemical pesticides, fungicides and use of antagonistic individuals are the major once. Use of Antagonistic organism is one of the best methods used for the control of fungal attacks. Because it is biocontrol method and have no any adverse impact on crop health. As well as it is cost effective, any sorghum cultivar can use it.*Trichoderma* reduces the growth of *Curvularialunata*, They showed the greatest inhibition in mycelial growth of *Curvularialunata*. 74.11–95.78% of inhibition against the *Curvularialunata* was recorded in dual culture technique (Klaram et al, 2022). The fungal invagination of *Curvularialunata* was control by the application of *Trichodermaharzianum* were also reported from United States of America. *Trichodermaharzianum* proved to be a good biological control agent against *Curvularialunata* (Alfiky and Weisskopf, 2021).*Trichodermal*application for the control of *Curvularialunata* is well known. It hampers the growth of mycelium of *Curvularialunata* and shows 45 % of inhibition (Sen et al, 2023).

Materials and methods:-

Collection of samples: -

Infected samples of sorghum panicles were collected from local fields of Sangrampur tehsil of Buldana district (Maharashtra) with the help of cutters and packed in ziplock bags. Samples were collected from different localities of Sangrampur tehsil and at different time interval. Collected samples were bringing into laboratory for further studies.

Preparation of media: -

For the isolation of pathogen PDA (potato dextrose media) were used. 100 gm potato was peeled out and weigh accurately with the help of weighing balance. Latter on potatoes were chopped into small pieces and boiled into distilled water. Boiled potatoes were squeezed with the help of muscling cloth and extract were taken into a conical flask. 20 gm dextrose was dissolved into distilled water in aseparate beaker. Simultaneously in another beaker 20 gm of agar agar were

dissolved in warm distilled water. Mix all the ingredients in one beaker pH were adjusted with the help of pH meter and final volume were made upto 1000 ml by adding distilled water. Sterilize the media and glassware; sterile media were poured in the petridishes.

Composition of media:-

Potato - 100 gm
Dextrose - 20 gm
Agar -agar - 20 gm
Antibiotics - pinch
D/W - 1000 ml

Isolation of *Curvularialunata*:-

Curvularialunata were isolated from the infected samples of sorghum panicles. Infected grains were taken from the head of sorghum, and inoculated on pre-sterilized petriplates containing agar medium in aseptic conditions. Incubate the plates for one week at 25 + 2^0C. Individual colonies were subculture on another petriplate and pure culture was obtained.

Identification of Pathogens:-

Identification of pathogens associated with infected grains of sorghum were carried out with the help of colony characters, growth pattern of fungi, texture of colonies, pigmentation pattern and microscopic examinations of the fungal culture with the help of binocular microscope. Confirmation of the pathogens was done by using scientific literature and manuals.

Isolation of *Trichodermaharzianum*:-

Trichodermaharzianum were isolated from the soil samples of crop fields. Soil samples were collected and brought to laboratories; Weigh 1 gram of soil sample and serial dilutions were made with the help of saline solution. Soil samples were inoculated on petriplates containing agar medium in aseptic conditions by spread plate technique. Plates were incubated at room temperature for 4-5 days; individual colonies were separate out by subculture technique. Identification of *Trichodermaharzianum*was done with the help of colony characters, microscopic observations and using monographs.

Antagonistic activity of *Trichodermaharzianum* against *Curvularialunata*:-

Antagonistic assay was performed by dual culture technique. Fresh culture of *Curvularialunata* was inoculated on four corners of petriplates containing PDA (Potato dextrose Agar) medium. *Trichodermaharzianum* culture was inoculated at the center of plate and allows incubating at room temperature.

Experimental Results:-

Antagonistic potential of *Trichodermaharzianum* were tested against *Curvularialunata* by dual culture technique and the observations were taken. From the results it is observed that *Trichodermaharzianum* attack on the mycelium of *Curvularialunata* and restricts their growth.

Mycelium of *Trichodermaharzianum* enters into the mycelium of *Curvularialunata* and absorbs the sap including all the nutrient present in them through haustoria. As a result the growth of mycelial structure of *Curvularialunata* gets restricted and in certain cases gets illuminated. In the present investigation the growth of *Curvularialunata* were arrested by the activity of *Trichodermaharzianum*.It shows 55.5% of inhibition against *Curvularialunata*.The growth of *Curvularialunata* was arrested by the activity of *Trichodermaharzianum* were reported by (Klaram et al, 2022). They showed *Trichodermaharzianum* reduces the growth of mycelium of *Curvularialunata* and shows 95.78% of inhibition. While similar type of results was shown by (Sen et al. 2023). They reported 45% of inhibition by *Trichoderma* against the growth of *Curvularialunata.*

Table: -Antagonistic activity of *Trichodermaharzianum* against *Curvularialunata*

Name of fungi	Control	Treated	% of Inhibition
Curvularialunata	5.8	2.8	55.5 %

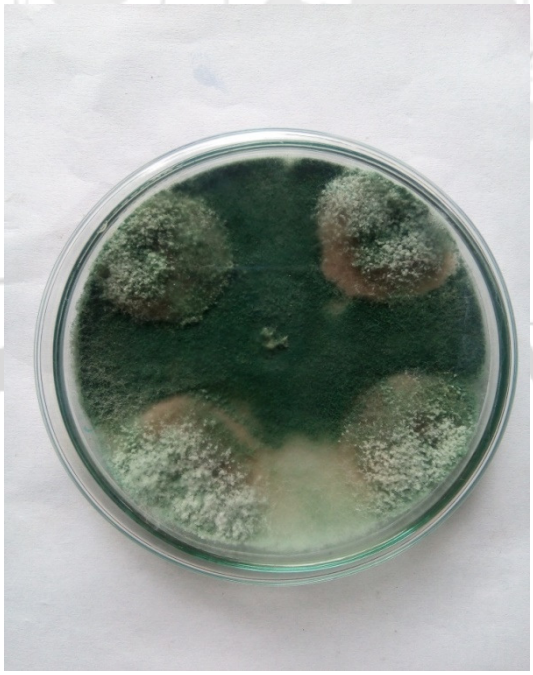

Fig: Antagonistic activity of *Trichodermaharzianum* against *Curvularialunata* by dual culture technique

Conclusions:-

From the results and observations it is concluded that, *Trichodermaharzianum* retards the growth of *Curvularialunata*. It helps the farmer to minimize the infection of pathogens on sorghum. *Trichodermaharzianum* shows such an antagonistic activity against *Curvularialunata* due to presence of certain diffusible substances present in them. It is then strongly recommended for the farmers to use them as a biocontrol agent. It is a cost effective as well as doesn't have any

adverse impact on the health of crop plant and human being.

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PHYTOCHEMICAL AND PHARMACOGNOSTIC EVALUATION OF *BARLERIALUPULINA*LINDL.

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Abstract:

The present evaluation was carried out on an ethnomedicinal plant Barlerialupulina Lindle. belongs to the family Acanthaceae. This plant used ethnomedicinally for various purpose like wound healing, anti-inflammatory against insect bites, remove warts, relief pain, snake bites, herpes simplex virus.

Phytochemical evaluation of leaves extract was carried out in various solvents such as petroleum ether, chloroform, acetone and ethanol. phytochemical screening revealed the presence of Alkaloids, Carbohydrates, Glycosides, Saponins, Tannins and flavonoids. In organoleptic evaluation, fine leaves powder was green in color with a slightly bitter taste, pungent odor and smooth texture. The transverse section of leaf shows uniseriate epidermis. Mesophyll tissue differentiated into palisade and spongy parenchyma. Vascular bundle is horse shoe shaped, which is separated by single celled parenchymatous endodermis. Stomata are numerous confined on lower surface. The present study is helpful in quality control of crude drugs and the authentication of this medicinal plant.

Key words: phytochemical, alkaloids, anatomy, *Barlerialupulina*.

Introduction:

Barlerialupulina Lindl. belongs to the family Acanthaceae. It is native to tropical regions of Asia and Africa with its highest species diversity. Its greatest representation is in Africa and Asia(Balkwill and Balkwill, 1997). *Barleria* is the third largest genus in the family Acanthaceae with 300 species (Vipin Kumar, 2018). Barleria (Acanthaceae) is a large, polymorphic, widespread genus of herbs, shrubs and rarely climbers distributed worldwide (Balkwill and Balkwill, 1998). Barlerialupulina plant used in folkloric Indian medicine is known locally as “Kali Kante-Koranti”.

Barlerialupulina is a small shrub plant and commonly known as Hophead, Philippine violet

in English and Bishalyakarani or Vishalyakarani in Bengali (Ghosh *et al*., 2009). It is also used for its medicinal importance as the leaf juice is given to stop bleeding when cut and the leaf paste is used as poultice to relief pain (Nag *et al.,* 2013). *Barlerialupulina* is also used as on snake bites, insect bites and herpes simplex virus (Kanchanapoom*et al*., 2001). leaves of this plant are used to treat snake bites, dog bites, swelling, bleeding wounds and rheumatism (Reshma *et al*., 2017), a strong inhibitory result against acne-inducing bacteria (Chomnawang*et al*., 2005), use leaves of the plant to remove warts (Samuel *et al*., 2010) and wound healing property (Mandal *et al*., 2015).

Plant-derived natural products, such as flavonoids, terpenoids, alkaloids and steroids have received considerable attention in recent years due to their diverse and effective pharmacological properties including antibacterial, antioxidant and antitumor (Anonomous, 2006). It also helps in standardization and isolation of desired therapeutic compounds from crude drugs for pharmaceuticals and nutraceutical's industries. The present study is helpful in quality control of crude drugs and the authentication of this medicinal plant.

Material and Methods:

Collection and identification of plant material:

The leaves was collected from Botanical garden of Shri Shivaji Arts, Commerce and Science College, Motala district Buldhana of Maharashtra. The plant material was taxonomically identified by using standard flora (Singh, 2001) and herbarium specimens was deposited in Department of Botany, Shri Shivaji Arts, Commerce and Science College, Motala. Leaves material was rinsed under tap water and allowed to dry. Fresh material was used to take section. Shade-dried material was grind into fine powder and kept in an airtight bottle for further use.

Organoleptic Evaluation:

Organoleptic characters such as color, odor taste and texture of leaves were evaluated (Khandelwal, 2008).

Microscopic Evaluation:

The microscopic evaluation of the leaf was done by taking the appropriate section of the leaf. The thin sections was stained with safranin, light green and mounted in DPX for observation.

Extraction of Plant Drugs:

About 25 gm of powdered leaves material was subjected to extraction in a Soxhlet apparatus. The powdered leaves material was successively extracted with petroleum ether, chloroform, acetone and ethanol as a solvent.

Phytochemical Evaluation (Evans, 2005; Kokate, 1986; Khandelwal, 2006):

In preliminary phytochemical evaluation, *Barlerialupulina* leaves powder extract was subjected to various qualitative chemical tests to estimate the presence of various phytoconstituents. The qualitative test for carbohydrates, alkaloids, glycosides, tannins, phytosterols, flavonoids, saponins and proteins was taken.

Results And Discussion:

Evaluation of plant crude drugs is a fundamental part of the establishment of correct identification and detection of adulterants in this plant material.

Organoleptic Evaluation:

The organoleptic characteristics of *Barlerialupulina* was given in Table 1. In organoleptic evaluation, the prepared leaves powder was green in color with a slightly bitter taste, pungent odor and smooth texture.

Table 1. Organoleptic Characteristics of *Barlerialupulina*Leaves.

Sr. No.	Parameters	Observation
1	Color	Green
2	Taste	Bitter
3	Odor	Slightly pungent
4	Texture	smooth

Microscopic Evaluation:

T.S. of Leaf:

The anatomy of a *Barlerialupulina* leaf follows a typical dicotyledonous plant structure, featuring several layers of cells and tissues. The transverse section of leaf shows (Fig. 1: C_1) uniseriate epidermis on both surface. The upper and lower epidermal cells are irregular and a waxy layer covering the epidermis. Epidermis is glabrous. Multicellular and cylindrical.

Mesophyll tissue of the leaf, sandwiched between the upper and lower epidermis. It consists of Palisade and spongy parenchyma. Palisade mesophyll cells are elongated cells located just beneath the upper epidermis. These cells are rich in chloroplasts. Spongy mesophyll cell located beneath the palisade mesophyll, this layer contains irregularly shaped cells with air spaces between them (Fig.1: C_1). Mid-rib showed 5-6 layered thick walled closely packed collenchymatous cell on both the surfaces. Vascular bundle embedded within the mesophyll tissue. Vascular bundle is horse shoe shaped, which is separated by single celled parenchymatous endodermis (Fig.1: C_2). Stomata are typically more numerous on the lower surface of the leaf.

T.S. of Petiole:

Petiole T.S. of the leaf petiole is more or less triangular in outline. Epidermis is the outermost uniseriate layer of cells covering the surface of the petiole and cutinized. Hypodermis is collenchymatous, 5-6 layered thick. Cortex is in between the epidermis and the vascular bundles. It composed primarily of parenchyma cells, which are relatively thin-walled and have large central vacuoles. Vascular bundles are arranged in a half ring in ground tissue. Vascular bundle typically arranged in a ring-like pattern within the cortex. Xylem is located towards the center of the bundle of the petiole, whereas phloem towards the lower side of the petiole. Only one vascular strand is

found on ground tissue. Two leaf traces are present on both side of the petiole (Fig.1: D).

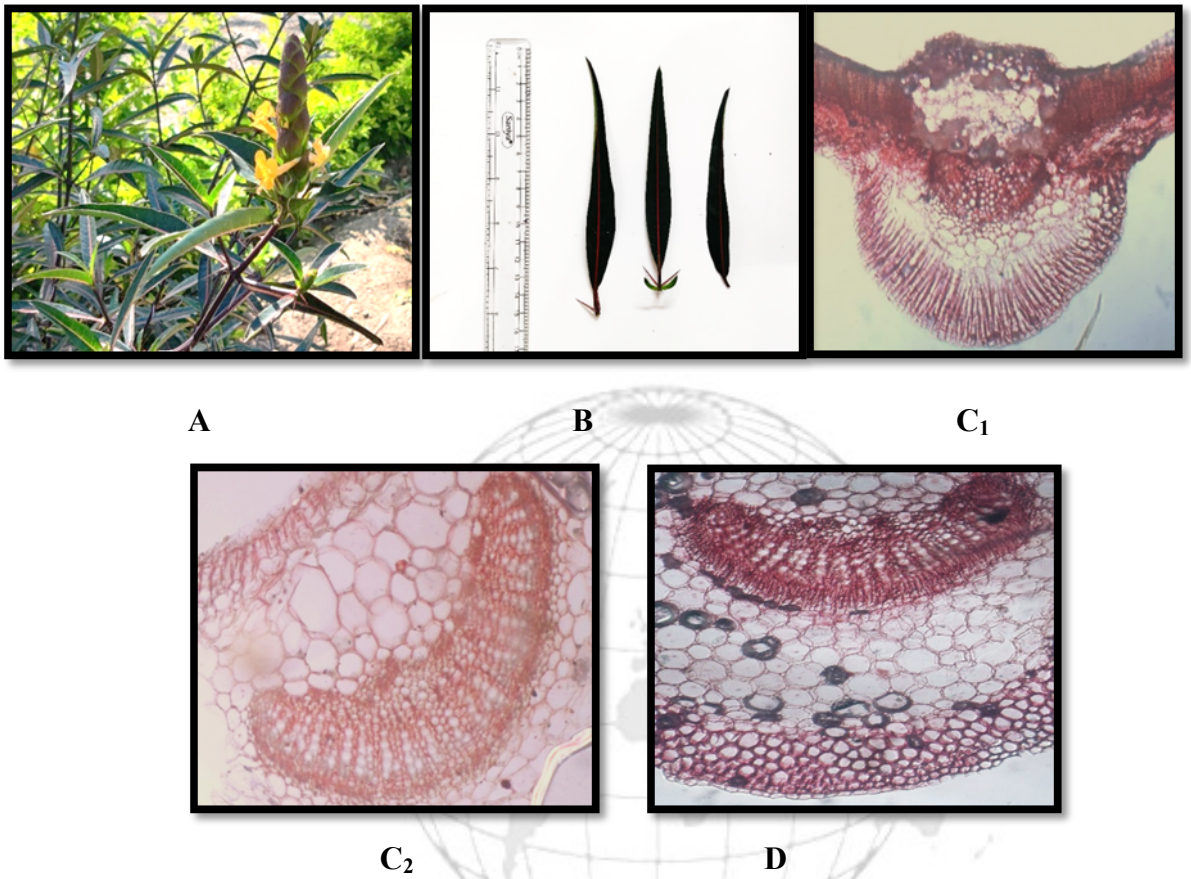

Fig. 1: *Barlerialupulina* Lindl A: Habit of plant, B: Leaf, C_1: T.S. of leaf, C_2: T. S. midrib of leaf and D: T.S. of petiole

Microscopy is useful for the study of internal structure, composition and inclusion of plant cells in detail.

Phytochemical Evaluation:

Phytochemical evaluation of *Barlerialupulina*leaves extract was done for the presence of alkaloids, carbohydrates, glycosides, proteins, amino acids, saponins, tannins and flavonoids. The result of the phytochemical evaluation is mentioned in Table 2.

Table 2: Phytochemical Evaluation of *Barlerialupulina* leaves.

Test for Phytochemicals	Reagents	Solvents			
		Pet. Ether	Chloroform	Acetone	Ethanol
Alkaloid	Dragandorff's	+	+	+	+
	Hager's	+	+	+	+
	Wagner's	-	+	-	+
Carbohydrates	Fehlings Test	+	+	+	+

	Benedicts Test	-	-	+	+
	Molischs Test	-	-	-	-
Glycosides	Keller-Killiani Test	+	+	-	+
Proteins	Biuret's	-	-	-	-
	Millon's	-	-	-	-
Amino Acid	Ninhydrin	-	-	-	-
Saponin	Foam Test	+	-	+	+
Tannin	Ferric Chloride	-	-	+	+
Flavonoids	Lead acetate	+	+	+	+

Phytochemical evaluation of *Barlerialupulina*leaves determines the kind of phytochemicals present in plant material. The leaves powder contains bioactive phytochemicals like Alkaloids, Carbohydrates, Glycosides, Saponins, Tannins and flavonoids. Ethnomedicinal and pharmacological features were expressed by the plant on the basis of the number of secondary metabolites present in it. The result found from preliminary phytochemical Evaluation will be useful in finding out the genuity of the drug.

Conclusion:

The result of this evaluation of *Barlerialupulina*leaves setup the standards which could be beneficial and serves as diagnostic tool for correct authentication of this medicinally important plant.

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