

3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

Maharashtra Gov.No

N.G.C.2002N.M.V./01/2001

M.Shi-3 Date 15 July 2002

Pragatik Shikshan Sanstha's



Savitribai Phule Pune University Affiliated
Identificaton No.P.U./A69/2002

Nutan Art's College Rajapur

Tal.Sangamner, Dist Ahmednagar, Pincode-422605 (Maharashtra)

Email.nutancollege99@gmail.com

www.pssnutancollege.com

AISHE CODE-C-41502

College Code-0694

जावक क्र NACR/417/23-24

दि. 21 / 08 / 2023

DVV CLARIFICATION

3.3.1.1 :Number of research papers in the Journals notified on UGC
CARE list year wise during the last five years.



Sadlay

Principal

**Nutan Art's College, Rajapur
Tal. Sangamner, Dist. Ahmednagar**

3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC
						Link to website of the Journal
Tagetes patula Linn,Afungicidal.....	Varpe S.N.	Botany	Wesleyan journal	2021	ISSN-	www.wesleyanjournal.in
Impact of PEG -6000 induced water stress...	Kadlag S.D.	Botany	Wesleyan journal	2021	0975-1386	www.wesleyanjournal.in
Plants species used by Tribes of Murbad tahasil in treatment of some Common Human Ailments Like Stomachache And Stomach Disorders	Varpe S.N.	Botany	Journal of the Maharaja sayajirao University	2022	ISSN: 0025-0422	https://msubaroda.ac.in/MSUB_Journal
Plants species used by Tribes of Murbad tahasil in treatment of human diarrhoea and dysentery	Kadlag S.D.	Botany	Journal of the Maharaja sayajirao University	2022	ISSN: 0025-0422	https://msubaroda.ac.in/MSUB_Journal
Plant species used by tribes of Murbad tahasil in dying and tanning	Kadlag S.D Varpe S.N.Gadakh V.D.Bharitar D.V. Suroshe V.M.	Botany	Journal of the Maharaja sayajirao University	2022	ISSN: 0025-0422	https://msubaroda.ac.in/MSUB_Journal
Plant species used by tribes of Murbad Tahsil...	Bharitkar D.V. ET. AL.	Botany	Journal of the Maharaja sayajirao University	2022	ISSN: 0025-0422	https://msubaroda.ac.in/MSUB_Journal



Kadlag
Principal
Nutan Art's College, Rajapur
Tal. Sangamner, Dist. Ahmednagar

Vaerpe-2021



TAGETES PATULA LINN., A FUNGICIDAL, ORNAMENTAL SPECIES OF ASTERACEAE FAMILY.

Kadlag, S. D

Principal: Nutan Arts, Commerce and Science College Rajapur Tal. Sangamner, Dist. Ahmednagar (MS).

Varpe S.N

Nutan Arts, Commerce and Science College Rajapur Tal. Sangamner, Dist. Ahmednagar (MS).

Gadakh V.D

Nutan Arts, Commerce and Science College Rajapur Tal. Sangamner, Dist. Ahmednagar (MS).

Deshmukh R.N

New Arts Commerce and Science College Parner.

kadlagsubhash@gmail.com

Abstract

Plants produce varieties of chemicals as secondary metabolites. These natural chemicals produced by the plants when secreted in the environment either promote or inhibit growth of other plants and even microbes. They are called allelochemicals which are eco-friendly i.e. biodegradable and are abundantly available. Inhibitory allelochemicals could be used as biocides in controlling fungal diseases of crops. Laboratory bioassay work was done for finding out allelopathic potentials of a common ornamental herb *Tagetes patula* Linn. of Asteraceae family. In the present work it was found out that the fresh leaf extracts of *Tagetes patula* Linn. of various concentrations inhibited mycelial growth of *Fusarium oxysporum* f. sp. *lentis* Schl. .

Key words: *Tagetes patula* Linn. , antifungal, *Fusarium oxysporum* f. sp. *lentis* Schl.

Article History

* Received: 24/08/2021; Accepted: 16/09/2021

Corresponding author: Deshmukh R.N

Introduction

Allelopathy, a current area of research, may be useful in agriculture to controlling diseases of crops. Plant- produced chemicals are good botanical source of biocides are eco-friendly i.e. biodegradable, renewable and abundantly available. Therefore, there is a vast scope for research in Allelopathy and crop diseases. Molisch (1937), father of Allelopathy introduced the word “Allelopathy” for beneficial as well as harmful (detrimental)



Kadlag
Principal
Nutan Arts College, Rajapur
Tal. Sangmaner Dist, A.Nagar

reciprocal biochemical interactions among plants including microorganisms. The present paper focuses on the aspects of Allelopathic fungicidal potentials of an ornamental species *Tagetes patula* Linn of Asteraceae family collected from the study area of Ahmednagar district, one of the largest districts of Maharashtra state. The district is located between 18°2' and 75°5' North latitude and 70°9' and 75°5' East longitude.

REVIEW OF LITERATURE

Rice (1984) recorded that the plant species of Asteraceae family contain antimicrobial Polyacetylenes like a-terthienyl in *Tagetes erecta* L. Singh and Tripathi (1993) recorded that *Launaea aspenifolia* (Willd.) Hook. f. strongly inhibit mycelial growth of *Fusarium oxysporum* f. sp. *lentis* Schl. Arora and Kaushik (2003) recorded that the extracts of *Conyza bonariensis* (L.) Crong., *Erigeron karvinskianus* DC., were potential in inhibiting soybean fungal pathogens viz., *Colletotrichum truncatum* (Schwein) Andrus & Moore, *Fusarium oxysporum* Schl. ex Fr. and *Macrophomina phaseolina* (Tassi) Goid. Chuihua *et al.* (2004) recorded that a common species of Asteraceae family viz, *Ageratum conyzoides* L., contains allelopathins like 3-caryophyllene, p-bisabolene and p-farnescene that could exert synergistic inhibitory effect on test plants. This plant species is herbicidal as well as fungicidal. Mandavia *et al.* (2000) worked on inhibitory effects of phenolic compounds on fungal metabolism in host-pathogen interactions in *Fusarium* wilt of cumin.

MATERIAL AND METHOD

Tagetes patula Linn.: Annual, cultivated as an ornamental herb; leaves pinnately divided; heads solitary, involucre gland dotted, ray florets yellow with red markings.

Fusarium oxysporum f. sp. *lentis* Schl.: It is classified in form-family Tuberculariaceae of order Moniliales (Class: Hypomycetes) and subdivision Deuteromycotina.

EXTRACT BIOASSAY: Experiments were conducted in the Research laboratory of Botany Department New Art's, Commerce and Science College, Ahmednagar at room temp (25 to 28°C) during the year 2014-2015.

Plants materials were collected from in and around Ahmednagar city. Stock solutions of the fresh leaf samples were prepared. Aqueous as well as methanolic extract solutions of 10%, 20%, 30% concentration were obtained by crushing leaves in a mortar and pestle (Narwal & Tauro, 1994).

Preparation of PDA medium : 200 g peeled pieces of potato tubers (*Solanum tuberosum*) were boiled in distilled water and filtered through muslin cloth in 100 ml conical flask. 15 g dextrose was added in it and then 15 g agar was added slowly while stirring it. Final volume 1000ml was made. This PDA medium was then autoclaved and used for culturing fungi in sterile petridishes.

Fusarium oxysporum f. sp. *lentis* Schl. procured from the Departmental laboratory was inoculated in agar medium under sterile conditions. Petridishes of 11 cm diameter containing freshly prepared PDA medium were used and allowed the fungus to grow. Many such plates were prepared. With the help of cork borer wells per petriplate were prepared. Leaf extracts of 10, 20 and 30% concentration were added separately in separate dishes. In control plates sterile distilled water was added in the wells. Six replicates of each treatment were maintained. Readings were taken after five days. Extracts inhibited the fungus around the wells. Inhibition zones around wells were measured randomly by taking at least 24 readings per treatment. Results obtained were



analyzed by single factor ANOVA multiple range test followed by CD at 0.05 % and Tukey's test by using Microsoft Excel program.

Observation and Results

Effect of aqueous and methanolic extracts of *Tagetes patula* Linn.on mycelial growth of *Fusarium oxysporum* f. sp. *lentis* Schl. :

[Refer table No1, Graph No 1]

In the present work it was found out that the fresh leaf extracts of *Tagetes patula* Linn. of various concentrations inhibited mycelial growth of the fungus *Fusarium oxysporum* around the wells prepared in the agar plates. The inhibition went on increasing with increase in leaf extract concentrations. The inhibitory zones were measured. About 24 readings were taken randomly. Aqueous as well as methanol extracts of *Tagetes patula* more or less equally inhibited mycelial growth of *Fusarium*.

Summary and conclusion

Tagetes patula Linn.of Asteraceae family is a common ornamental plant. In the present work it was found out that the fresh leaf extracts of various concentrations inhibited significantly mycelial growth of a common saprophytic fungus *Fusarium oxysporum* f. sp. *lentis* Schl. The inhibition was concentration correlated. *Tagetes* proved its fungicidal potential. It can be further used to find out its fungicidal potential against other fungi that cause varieties of crop plant diseases. Plant species of Asteraceae family contain antimicrobial Polyacetylenes (Rice, 1984). Antifungal activities of *Tagetes* might be due to the presence of such compounds.

There are abundant species of Asteraceae family that could be tried to find out effect on not only saprophytic but **phytopathogenic fungi that cause fungal diseases on agricultural crop plants**. Instead of using non-biodegradable synthetic agrochemicals to control fungal diseases of crops that also cause severe pollution why not to use plant originated biodegradable fungicides to control diseases of crop plants? Efforts are to be done to work out fungicidal properties of plant species of Asteraceae.

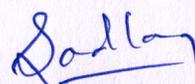
ACKNOWLEDGMENTS

I should not miss this opportunity to express my heart –felt gratitude and regards to the Management of Ahmednagar Jilha Maratha Vidya Prasarak Samaj, Ahmednagar and Principal Dr. Zaware B.H., ,HOD Dr Patil B.A.,New Arts Commerce & Science College, Ahmednagar; Dr Zaware B.N. and Dr.Khose R.G. for continued encouragement and kindly allowing me to undertake this work and Hon. Management of Pragatik Shikshan Sanstha Rajapur Tal.Sangamner Dist.Ahmednagar.

REFERENCES

- 1) Arora Charu,Kaushik R.D.,Kumar K.,Garg G.K (.2003) Fungicidal potential of Kumaon and Tarai region plants against mushroom fungal pathogens. *Allelopathy Journal* 11(1):63-70.
- 2) Chuihua Kong,Fei Hu, ,Wenju Liang ,Wang Peng and Yong Jiang (2004)



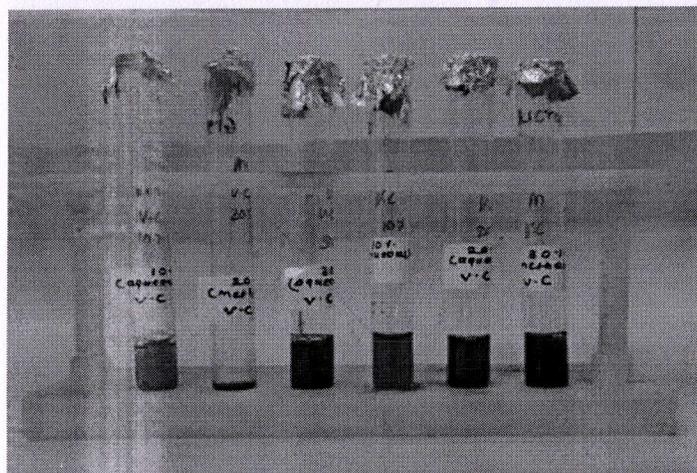

Principal
Nutan Arts College, Rajapur
Tal. Sangmaner Dist, A.Nagar

Allelopathic potential of *Ageratum conyzoides* at various growth stages in different habitats
*Allelopathy Journal*13(2):233-240.

- 3) Molisch, Hans (1937), "*The Influence of one plant on another*". Allelopathy. Edited by Narwal S.S., Translated by L.J. La Fleur & M.A. Bari Malik. (2001), Scientific Publishers, Jodhpur (India).
- 4) Mandavia M.K., Khan N.A., H.P. Gajera, J.H. Andharia and M. Parameswaran (2000) Inhibitory effects of phenolic compounds on fungal metabolism in host-pathogen interactions in *Fusarium* wilt of cumin *Allelopathy Journal*7(1):85-92
- 5) Narwal, S.S. & Tauro. P. (1994) *Allelopathy in Agriculture and forestry* Scientific Publisher, Jodhpur (India).
- 6) Rice E.L. (1984) Biological control of selected plant diseases by microorganisms *Allelopathy Journal*1(2):77-88.
- 7) Singh Jaspal & Tripathi N.N. (1993) Efficacy of plant extracts against *Fusarium oxysporum* f.sp. *Lentis* on *Lens esculenta* *J. Indian Bot. Soc.* 72 : 51-53.



1) *Tagetes patula* Linn.



2) Leaf Extracts.

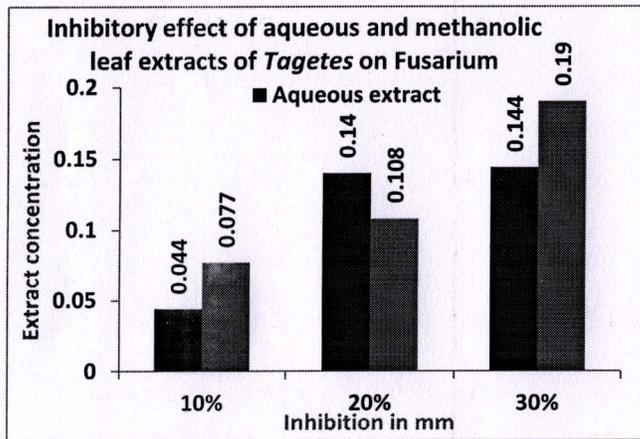
Table No 1: Effect of aqueous and methanolic leaf extract of *Tagetes patula* Linn.on growth of *Fusarium oxysporum*

Sr No	Extract	conc	Inhibition zone (in mm)	P-value	CD at 0.05%
1	Aqueous	control (DW)	0.00a ±0.00	1.67E-12	0.026
		10%	0.044b ±0.007		
		20%	0.14c ±0.019		
		30%	0.144d ±0.020		
2	Methanolic	control (DW)	0.00a ±0.00	3.7E-12	0.029
		10%	0.077b ±0.01		
		20%	0.108c ±0.013		
		30%	0.190c ±0.026		

Data presented are means of six replicates; values within the same column with different letters a(a,b,c,d) are significantly different at 0.05% P-level by Single factor ANOVA test followed by CD & Tukeys test.,

±Standard error of means. In above table, Q values are more than 'q' critical Value '3.68'. Hence means are significantly different.

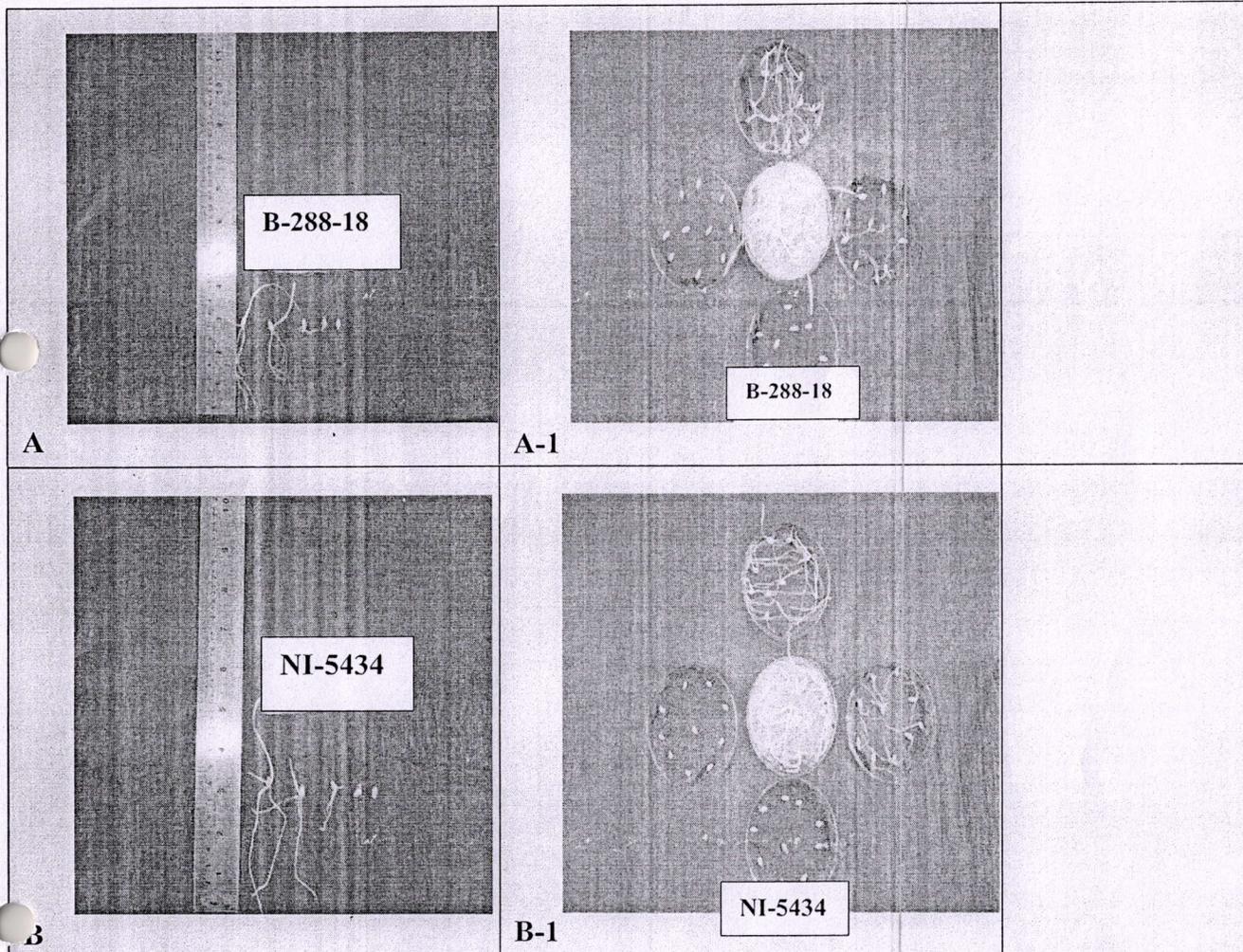
Graph No 1: Effect of aqueous and methanolic leaf extract of *Tagetes patula* Linn.on growth of *Fusarium oxysporum*

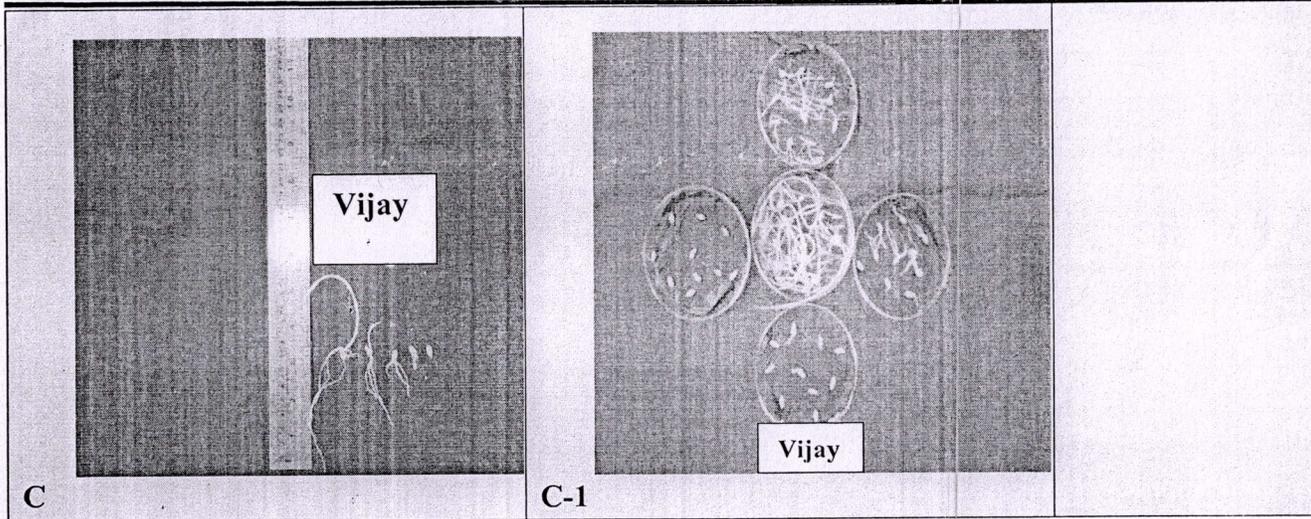


Dadley
Principal
Nutan Arts College, Rajapur
Tal. Sangmaner Dist, A.Nagar

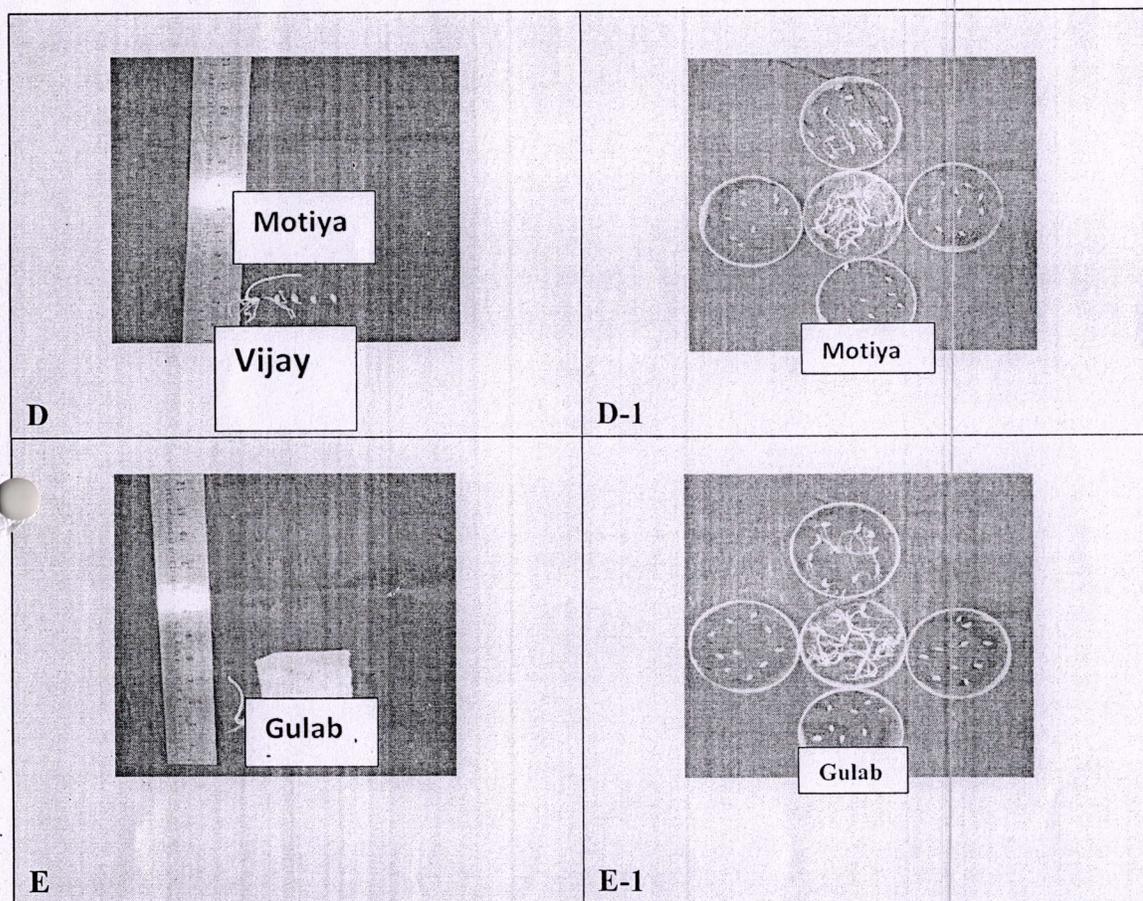
-8Bar	0.05(SD± 0.00)	0.05(SD± 0.00)	1.18(SD± 0.098)	0.979(SD± 0.125)	50 (SD± 0.01)
-------	-------------------	-------------------	--------------------	---------------------	------------------

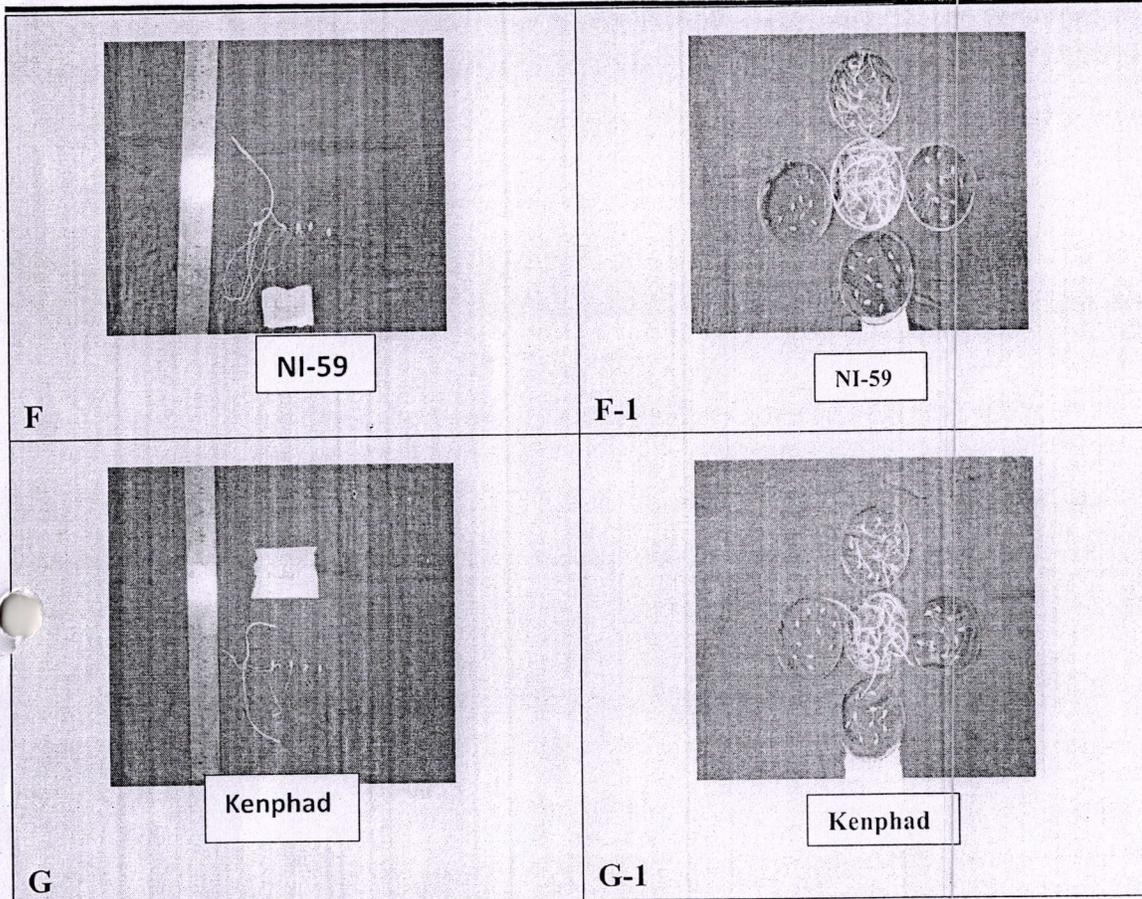
Photoplate-1:- Effect of PEG-6000 induced water stress on seed germination parameters on *B-288-18*; *NI-5434* and *Vijay* wheat cultivar





Photoplate-2:- Effect of PEG-6000 induced water stress on seed germination parameters on *Motiya; Gulab; NI-59 and Kenphad* wheat cultivar





Sadlay
Principal
Nutan Arts College, Rajapur
Tal. Sangamner Dist, A.Nagar



IMPACT OF PEG-6000 INDUCED WATER STRESS ON SEED GERMINATION PARAMETERS OF WHEAT CULTIVARS.

Ravindra Deshmukh

Research Guide and Research Student, Department of Botany, sorghumws@gmail.com

Tukaram Thopate

Prof., Department of Chemistry, New Arts, Commerce and Science College Parner, Ahmednagar, 414 302.

Kalpana Sawant

Research Guide and Research Student, Department of Botany,

Anil Bhalerao

Asst. Prof., Department of Botany S. S. and L. S. Patkar and V. P. Varde College Goregaon West, Mumbai 400 062.

Kadlag, S. D

Nutan Arts, Commerce and Science College Rajapur Tal. Sangamner, Dist. Ahmednagar (MS).

Abstract: Amongst all the natural climatic hazards, drought is the single most important disaster affecting food production throughout the world. In the present investigation seven wheat cultivars B-288-18; NI-5434; Vijay; Motiya; Gulab; NI-59 and Kenphad of wheat were preliminary screened thoroughly under PEG-6000 induced drought stress during seed germination parameters. The results on seed germination percentage, root and shoot length as well as FWt. and DWt. were correlated. In all the cultivars of wheat percentage and seed germination was reduced and the degree of reduction was intensified with increasing stress level. At extreme water stress (-8bar) the cultivar Kenphad and B-288-18 showed seed germination. All the promising cultivars were highly sensitive towards all the levels of water stress as observed from percentage inhibition in root and shoot length. The cultivar Kenphad and B-288-18 showed better performance for in root length as well as shoot length. The cultivar Vijay and NI-5434 showed moderate performance regarding seed germination parameters. The wheat cultivars NI-59, Motiya and Gulab showed very poor performance to seed germination parameters.

On the basis of all above parameters the cultivar Kenphad and B-288-18 was ranked at number one position for showing comparatively better survival at different levels of PEG induced water stress so they may be called as drought tolerant, next to it at second position wheat cultivar was Vijay and NI-5434 so may be called as moderately drought tolerant and at last position NI-59, Motiya and Gulab may be called as drought susceptible wheat cultivars.

Key Words: PEG- 6000, Wheat, Seed germination, FWt, Dwt.



Article History

* Received: 24/08/2021; Accepted: 16/09/2021

Corresponding author: Ravindra Deshmukh

1. Introduction

Wheat is mainly a rabi seasonal crop in India. Wheat is grown in a various soils of India. Soils with a clay loam, good structure and moderate water holding capacity are suitable for wheat cultivation. Care should be taken to avoid very porous soils. Wheat is belonging from Family Gramineae. Its botanical name is *Triticum aestivum*. The Soft Wheat (Bread wheat) is originated at Hindukush mountainous regions adjoining to India and Afganistan. Wheat species distinct to three groups diploid, tetraploid and hexaploid in according to chromosome number in their reproductive cells 7, 14 and 21 respectively. India has largest area under wheat in the world and wheat is grown under diverse environment.

Wheat is sown in September or October after the summer monsoon rains are over. Wheat requires a well tilled but compact soil for good and uniform seed germination. Wheat responds well to the commercial fertilizers.

2. Materials and Methods

In the present investigation, the seed germination experiments were conducted at the Department of Botany and Research Centre, New Arts, Commerce and Science College, Parner. The authentic seeds of seven cultivars of wheat (B-288-18; NI-5434; Vijay; Motiya; Gulab; NI-59 and Kenphad) were procured from the Agricultural Research Station, Niphad, Dist. Nashik, (MS) for preliminary screening. The seven cultivars of wheat were screened for their drought tolerant abilities by applying PEG-6000 induced water stress at seed germination level (-2 to -8 bar).

The healthy and uniform seeds of selected cultivars of wheat were washed thoroughly in water, surface sterilized with 0.1% HgCl₂, and washed with distilled water for 3-4 times. These seeds were kept for germination on germination paper in sterilized petri plates, containing different concentrations of PEG-6000 solutions such as 0 bar (distilled water), -2 bar, -4 bar, -6 bar and -8 bar. The method described by [9] was followed to prepare the different solutions of PEG-6000 (Table 1).

Five ml of PEG-6000 solution of respective concentration was added in each petri plate. The control was maintained with distilled water. All the sets were arranged in triplicate under uniform conditions in seed germination chamber. Observations on following different parameters were recorded on seventh day.

Germination percentage:-

Germination percentage was determined on seventh DAS [7]

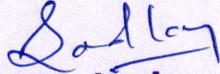
Length of plumule and radicle:-

On 7th day of sowing, 10 seedlings from each replication and treatment were randomly selected for measuring the root and plumule length.

Fresh and dry weight:-

[90]




Principal
Nutan Arts College, Rajapur
Tal. Sangmaner Dist, A.Nagar

On 7th day ten seedlings were randomly selected for recording fresh weight. These seedlings were kept in an oven at 60 °C, till constant dry weight was obtained. The total dry weight of seedlings from control and each treatment was recorded

3. Results and Discussion

Effect of PEG-6000 induced water stress on seed germination parameters

a) Seed germination:

The effect of PEG 6000 induced water stress on seed germination in different cultivars of wheat recorded in Table 2 and shown in photo plate 1 and 2 revealed that in all the cultivars with increase in PEG induced water stress seed germination was drastically reduced from -2 to -8 bar. In all the cultivars of wheat at control and -2 bar solution 100% seed germination was recorded. At -4 bar NI-5434 and Kenphad 100% seed germination was noted which was followed by B-288-18 (90%), Motiya and NI-59 (80%) and Gulab (70%). At -6 wheat variety Kenphad showed 100% seed germination which was followed by Vijay (90%), NI- 5434 (80%), B-288-18, Motiya and NI-59 (70%) and Gulab (60%). At higher water stress (-8 bar) B-288-18 and NI-59 showed 70% seed germination which was followed by Kenphad (50%) and NI- 5434 (30%). Wheat variety Vijay, Motiya and Gulab showed very poor performance (00%) regarding seed germination it indicate that these cultivars may be drought susceptible. The cultivar Kenphad showed better performance regarding seed germination as compared to others.

b) Root length:-

The root length in all the cultivars decreased from -2 to -8 bar PEG induced water stress. The maximum root length was recorded in wheat cultivar B-288-18 (11.69 cm), Kenphad (11.39 cm), Vijay (11.13 cm), NI-5434 (11.01 cm), NI-59 (9.91 cm), Motiya (6.8 cm) and Gulab (6.38 cm) at control condition. With increase in water stress in all the cultivars root length were decreased. At -4 bar water stress wheat cultivar NI-5434 showed better performance regarding root length, in this cultivar root length 4.68 cm which was followed by Kenphad (4.55 cm), Vijay (2.86 cm), B-288-18 (2.18 cm), NI-59 (1.19 cm), Gulab (0.86 cm) and Motiya (0.78 cm). At -6 bar water stress wheat cultivar Kenphad showed better performance regarding root length in this cultivar root length 1.52 cm which was followed by NI-5434 (0.72 cm), Vijay (0.45 cm), B-288-18 (0.18 cm), Motiya and Gulab (0.15 cm) (Table 2 and shown in photo plate 1 and 2).

c) Shoot length:-

The shoot length was also decreased with increase in water stress. The maximum plumule length at -2 bar PEG induced water stress was recorded in NI-5434 (3.75 cm) and it decrease to 0.03cm in -8 bar which was followed by cultivar B-288-18 3.35cm at -2 bar and it decrease to 0.06cm at -8 bar, NI-59 2.64cm at -2 bar and it decreases to 0.04cm at -8 bar, Cultivar Gulab 1.38cm at -2 bar and it decreases to 0.06 cm at -6 bar and in this cultivar there is no plumule formation is noted at -8 bar. Very poor performance regarding shoot length was recorded in wheat cultivar Vijay followed by Motiya it means that these two cultivars are may be susceptible the water stress.

d) Fresh Weight:-

The seedling FWt in all the cultivars of wheat was decreased with increase in PEG-6000 induced water stress. In all the cultivars of wheat from -2 bar to -8 bar fresh weight was decreased. The best results were noted in wheat cultivar B-288-18 {-2 bar (2.06gm) and at -8 bar (1.29 gm)} which was followed by NI-59 {-2 bar (2.0gm) and at -8 bar (1.21 gm)}, Vijay {-2 bar (1.97gm) and at -8 bar (1.63 gm)}, Motiya {-2 bar (1.63gm) and at -8 bar



(1.14 gm)}, Kenphad {-2 bar (1.76gm) and at -8 bar (1.18 gm)}, NI-5434 {-2 bar (1.51 gm) and at -8 bar (1.11 gm)} and Gulab {-2 bar (1.44 gm) and at -8 bar (1.1 gm)} .

e) Dry Weight:- The seedling dry weight in four cultivars of wheat was increased with increase in PEG-6000 induced water stress and only in three cultivars with increasing water stress slight decrease in dry weight was noted. The four cultivars of wheat showed increase in weight is Vijay {-2 bar (1.27gm) and at -8 bar (1.28 gm)}, B-288-18 {-2 bar (0.96 gm) and at -8 bar (1.01 gm)}, Gulab {-2 bar (0.86 gm) and at -8 bar (0.98 gm)} and NI-5434 {-2 bar (0.80 gm) and at -8 bar (0.92 gm)}. The three cultivars of wheat showed slight decrease in weight is NI-59 {-2 bar (1.12 gm) and at -8 bar (1.04 gm)}, Motiya {-2 bar (1.07 gm) and at -8 bar (0.95 gm)} and Kenphad {-2 bar (0.99 gm) and at -8 bar (0.97 gm)}.

Our results were confirmed with the many workers, the two different levels of PEG-6000: 0% and 10%. PEG stress significantly reduced percent germination, shoot length and root length. PEG stress significantly increased dry weight in twenty two wheat cultivars (11). Seed germination and vigor index of twenty wheat genotypes were reduced with the increment of water stress induced by PEG. Shoot and root lengths and seedling dry weight of 10 days old seedlings were found to be reduced due to the increment of water stress [8]. Seed germination percentage, root and shoot length and root shoot ration decrease with increases in PEG 6000 induced water stress in ten barley cultivars [2]. The linear correlation between water stress and slight increase in dry matter accumulation in Triticum sps. [4].

In sorghum and wheat seedlings under PEG-6000 induced water stress the root and shoot length, root: shoot ratio was reduced with increased level of water stress [6]. In four genotypes of sorghum namely M35-1, SPV-86, CSH-1 and CSH-8R under manitol induced water stress germination percentage was decreased with increasing water stress from 2.5 to 10 atmospheres. The plumule and radicle lengths were progressively decreased with increase in osmotic tension. The radicle length was affected more than plumule length [1]. The germination percentage was decreased with increasing concentration of PEG, in eleven different sorghum cultivars [10].

References

1. Gill P. K., A. D. Sharma., P. Singh and S. S. Bhullar. (2002). Osmotic stress induced changes in germination, growth and soluble sugar content of Sorghum bicolor (L.) Moench seeds. Bulg. J. Plant Physiol. **28 (3-4)**. 12-25.
2. Hellal F. A., H. M. El- Shabrawi, M. Abd EI- Hady, I. A. Khatab, S. A. A. EI- Sayed and Chedly Abdely (2018) Influence of PEG induced drought stress on molecular and biochemical constituents and seedling growth of Egyptian barley cultivars. Jr. of Gen. Eng. And Biotech. 16, 203-212
3. Joshi M.W. and B. B. Jadhav. (1992). Effect of osmotic potential on germination of sorghum. Ann. Plant Physiol. **6(2)**. 285-287.
4. Kameli A. and D. M. Losel. (1996). Growth and sugar accumulation in durum wheat plants under water stress. New Phytol. **132**:57-62.
5. Lad S. K. (1986). Effect of different osmotic media of manitol and polyethylene glycol- 4000 on germination and early seedling growth of sorghum variety M 35-1. Sorghum News Lett. **29**: 90.



6. Meena R. K., T. R. Meena, R. Ganesh, A. Joshi, K. B. Shukla and P. N. Mathur. (2003). Effect of polyethylene glycol induced water stress on grain water uptake and growth of seedlings in cultivars of wheat and jowar. National Seminar on Plant Physiology held at Tirupati. **S1-P5: 60.**
7. Prado F. E., C. Boero., M. Gallardo., and J. A. Gonzalez. (2000). Effect of NaCl on germination, growth and soluble sugar content in *Chenopodium quinoa* wild seeds. *Bot. Bull. Acad. Sin.* 41: 27-34.
8. Rana M.S., M.A. Hasan*, M.M. Bahadur and M.R. Islam (2017) Effect of Polyethylene Glycol Induced Water Stress on Germination and Seedling Growth of Wheat (*Triticum aestivum*). *The Agriculturists* 15(1): 81-91.
9. Sairam R. K. and S. Kumari. (1998). Measurements of water potential, relative water content and membrane stability. A short course on "Physiological analysis of yield in crop plants". ICAR, IARI, New Delhi. 131-137.
10. Scarascia M. E. V., M. D. Lucia, M. Mastroilli and S. M. E. Venezian. (1979). Germination of sorghum seeds under conditions of simulated water stress. *Ann Sperimentale Agronomica.* **10:** 119-133.
11. Shatabdi Ghosh, Md. Abu Shahed, Arif Hasan Khan Robin (2020) Polyethylene Glycol Induced Osmotic Stress Affects Germination and Seedling Establishment of Wheat Genotypes. *Plant Breed. Biotech.* 8(2):174-185

Table 1: The quantity of Polyethylene glycol (PEG)-6000 (g L⁻¹) for different water stress treatment(s) at different room temperature range.

Stress (- bars)	Temperature °C				
	15	20	25	30	35
2	105	112	119	128	137
4	161	169	178	188	199
6	204	214	224	235	247
8	241	251	262	278	287



Sadlay
Principal
 Nutan Arts College, Rajapur
 Tal. Sangmaner Dist, A. Nagar

Table 2:- Effect of PEG-6000 induced water stress on seed germination parameters on wheat cultivar.

Wheat Cultivars	PEG-6000 Water Stress	Seed Germination Parameters				
		Root Length (cm)	Shoot Length (cm)	Fresh weight (gm)	Dry weight (gm)	Seed Germination (%)
B-288-18	Control	11.69 (SD± 3.205)	9.91(SD± 2.903)	3.55(SD± 0.29)	0.853(SD± 0.05)	100 (SD± 0.026)
	-2 Bar	7.18(SD± 1.075)	3.53(SD± 1.679)	2.06(SD± 0.032)	0.96(SD± 0.086)	100 (SD± 0.026)
	-4 Bar	2.18(SD± 0.848)	0.22(SD± 0.301)	1.963(SD± 0.20)	1.05(SD± 0.01)	80 (SD± 0.015)
	-6 Bar	0.18(SD± 0.078)	0.08(SD± 0.037)	1.24(SD± 0.120)	1.021(SD± 0.012)	70 (SD± 0.026)
	-8Bar	0.1(SD± 0.081)	0.06 (SD± 0.021)	1.29(SD± 0.41)	1.009 SD±(0.002)	60 (SD± 0.026)
NI - 5434	Control	11.01(SD± 2.252)	9.71(SD± 1.91)	2.59(SD± 0.1)	0.688(SD± 0.044)	100 (SD± 0.0264)
	-2 Bar	8.11(SD± 1.875)	3.75(SD± 2.157)	1.51(SD± 0.060)	0.806(SD± 0.024)	100 (SD± 0.0264)
	-4 Bar	4.68(SD± 15.00)	0.26(SD± 0.126)	1.22(SD± 0.11)	0.899(SD± 0.044)	100 (SD± 0.0264)
	-6 Bar	0.72(SD± 0.250)	0.11(SD± 0.051)	1.44(SD± 0.072)	0.898(SD± 0.044)	80 (SD± 0.015)
	-8Bar	0.04(SD± 0.057)	0.03(SD± 1.69)	1.11(SD± 0.060)	0.920(SD± 0.01)	30 (SD± 0.021)
Vijay	Control	11.13(SD± 1.48)	10.77(SD± 1.97)	4.48(SD± 0.224)	1.036(SD± 0.018)	100 (SD± 0.026)
	-2 Bar	4.68(SD± 2.14)	1.7(SD± 2.15)	1.97(SD± 0.116)	1.274(SD± 0.087)	100 (SD± 0.026)
	-4 Bar	2.86(SD± 1.248)	0.19(SD± 0.126)	2.02(SD± 0.052)	1.251(SD± 0.025)	90 (SD± 0.025)
	-6 Bar	0.45(SD± 0.452)	0.12(SD± 0.051)	1.94(SD± 0.100)	1.333(SD± 0.11)	90 (SD± 0.025)
	-8Bar	0(SD± 0.00)	0(SD± 1.6)	1.63(SD± 0.106)	1.284(SD± 0.142)	0 (SD± 0.0)



Qadri
Principal
Nutan Arts College, Rajapur
Tal. Sangamner Dist, A.Nagar

Motiya	Contr ol	6.8(SD± 2.305)	6.69(SD± 2.29)	3.52(SD± 0.219)	0.854(SD± 0.068)	100 (SD± 0.0264)
	-2 Bar	3.08(SD± 1.711)	0.39(SD± 0.409)	1.63(SD± 0.005)	1.007(SD± 0.058)	100 (SD± 0.0264)
	-4 Bar	0.78(SD± 0.629)	0.13(SD± 0.047)	1.93(SD± 0.105)	0.981(SD± 0.21)	80 (SD± 0.015)
	-6 Bar	0.15(SD± 0.121)	0.08(SD± 0.037)	1.19(SD± 0.106)	0.951(SD± 0.115)	70 (SD± 0.026)
	-8Bar	0(SD± 0.00)	0(SD± 0.00)	1.14(SD± 0.075)	0.952(SD± 0.026)	00 (SD± 0.0)
Gulab	Contr ol	6.23(SD± 1.246)	6.84(SD± 1.142)	3.38(SD± 0.14)	0.942(SD± 0.120)	100 (SD± 0.0264)
	-2 Bar	3.56(SD± 1.460)	1.38(SD± 1.032)	1.44(SD± 0.120)	0.859(SD± 0.280)	100 (SD± 0.0264)
	-4 Bar	0.86(SD± 0.340)	0.13(SD± 0.106)	1.34(SD± 0.170)	1.015(SD± 0.008)	70 (SD± 0.026)
	-6 Bar	0.15(SD± 0.197)	0.06(SD± 1.52)	1.16(SD± 0.083)	0.982(SD± 0.142)	60 (SD± 0.026)
	-8Bar	0(SD± 0.00)	0(SD± 0.00)	1.1(SD± 0.057)	0.981(SD± 0.132)	00 (SD± 0.0)
NI-59	Contr ol	9.91(SD± 1.023)	11.51(SD± 2.133)	4.19(SD± 0.080)	1.068(SD± 0.039)	100 (SD± 0.0264)
	-2 Bar	6.97(SD± 1.154)	2.64(SD± 1.623)	2(SD± 0.060)	1.125(SD± 0.071)	100 (SD± 0.0264)
	-4 Bar	1.19(SD± 0.859)	0.1(SD± 0.0462)	1.51(SD± 0.105)	1.142(SD± 0.072)	80 (SD± 0.015)
	-6 Bar	0.44(SD± 0.292)	0.1(SD± 0.053)	1.34(SD± 0.121)	1.13(SD± 0.068)	70 (SD± 0.026)
	-8Bar	0.07(SD± 0.095)	0.04(SD± 0.00)	1.21(SD± 0.1050)	1.04(SD± 0.0120)	60 (SD± 0.026)
Kenph ad	Contr ol	11.39(SD± 1.726)	9.32(SD± 1.112)	3.95(SD± 0.125)	0.849(SD± 0.174)	100 (SD± 0.0264)
	-2 Bar	6.3(SD± 2.206)	1.18(SD± 0.436)	1.76(SD± 0.125)	0.996(SD± 0.11)	100 (SD± 0.0264)
	-4 Bar	4.55(SD± 1.151)	0.19(SD± 0.110)	1.602(SD± 0.101)	1.073(SD± 0.037)	100 (SD± 0.0264)
	-6 Bar	1.52(SD± 0.922)	0.12(SD± 0.0421)	1.38(SD± 0.141)	0.99(SD± 0.135)	100 (SD± 0.0264)



Dadlay
Principal
Nutan Arts College, Rajapur
Tal. Sangamner Dist. A. Nagar

PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN TREATMENT OF
SOME COMMON HUMAN AILMENTS LIKE STOMACHACHE AND STOMACH
DISORDERS.

¹Varpe S.N., ²Suroshe, V.M., ³Kadlag, S.D., ⁴Gadakh V.D., ⁵Bharitkar D.V ⁶Gaykar, B. M
^{1,3,4,5} Nutan Arts, Commerce and Science College, Rajapur Tal Sangamner, Maharashtra, India.

⁶Department of Botany. Ahmednagar College, Ahmednagar, Maharashtra,

²JSM's Jr. College Shivle, Taluka- Murbad, Dist. Thane, Maharashtra.
India.kadlagsubhash@gmail.com

ABSTRACT

Present work is the result of intensive, systematic, Ethnobotanical exploration of Murbad Tahasil, Dist.Thane. Genera and species of medicinal plants used by tribes of Murbad Tahasil in treatment of human ailments were recorded. Out of total medicinal plants Thakur and Katkari tribes employ 20 genera and species in the treatment of stomachache and 17 genera in gastric disorders. Various plant parts viz. Leaves, flowers, fruits, seeds and barks of medicinal plants are used for curing ailments like stomach ache and gastric disorder.

Key words: Ethno botany, human ailments, stomachache, stomach disorders, plant resources.

INTRODUCTION:

Ethnic's knowledge related to plant resources is documented in 'Ethno botany'. Hershberger (1895) coined the term 'Ethno botany' for the study of plant species used by aboriginal people. It is a promising field of research. It has created enthusiasm among the researchers how to save the traditional knowledge of tribes. Early origin of Ayurveda must have had its foundation in Ethno botanical folklore. The tribes living in remote areas and villages mostly depend upon the folk medicines and household remedies. The practice of folk medicines to cure human ailments descends down ancestrally. 'Medicine men' do not easily disclose their knowledge to others. The valuable information of medicinal remedies may get vanished with 'medicine man'. Tribes in Thane district are: viz. Thakur, Warali, Katkari, Koli (Jagtap and Singh, 2002).. The present Ethnobotanical work in Murbad tahasil was undertaken.

The plants are keenly associated with the social customs and rituals of tribes. The tribes have been protecting the natural vegetation in the form of sacred groves. Conservation of plant resources is one of the national needs. Traditional knowledge of tribes and their participation has importance in conservation of biological resources.

Location of Murbad Tahasil: It is mountainous and tribal Tahasil of Thane District which lies approximately at 19° 31' N and 73° 35' E (Collectorate of Thane District, 2014). The climate of Murbad comprises the south-west monsoon, post-monsoon season, cold and summer seasons. The average relative humidity is 77%. Summer has day temperature (33°C to 41°C). The rainy season starts from June first week and continues till September. The average annual rainfall in the district is 2,293mm. July is the rainiest month of the year. The forests are of tropical mixed deciduous and semi-evergreen types dominated by Madhuca-Terminalia community. The area under forest cover is categorized under reserved, protected and unclassed forests of aggregate area 36256.122 ha (362.56 sq kms). Some of the dominant plant species are viz. Terminalia alata, Madhuca longifolia var. latifolia and Anogeissus latifolia. Teak occurs along with dominant Bridelia retusa, Lannea coromandelica, Mallotus philippensis, Mangifera indica, Mitragyna parviflora, Pongamia pinnata. Thakurs form the major part of tribal population followed by Mahadeo Koli and then Katkari/Kathodi tribe. 'Medicine men' of Thakur and Katkari tribes possess good knowledge of medicinal plants. The tribals spend maximum time in the forests in collecting different materials viz. flowers, fruits, nuts, bark, shoots, tubers, roots, leafy vegetables, gum, honey and leaves of Gunj and Bel trees. Drinking liquor prepared from flowers of Madhuca longifolia var. latifolia. (Moha) is a part of their lifestyle. Katkari (Kathodi) is a nomadic tribal group.



REVIEW OF LITERATURE

Once the forests had luxuriant vegetation but with passage of time deforestation took place. Forest remnants may be called the sacred groves. (Gadgil and Vartak (1975).

Deities in the sacred grove of area of 'Panshet' dam, Maharashtra state, (India) are ferocious in nature and cause serious illness or death to offenders. People are allowed to use dead wood and leaf litter. There are 233 sacred groves (Devrais) of the districts of Maharashtra State (India). These grooves in forests have been playing a vital role in preservation of plant species diversity (Gadgil and Vartak (1981).

People in Thailand use *Blumea balsamifera* in cold and skin itching while Chinese use it as carminative and indigestion problems (Huyin et al., 2000).

Tribes of Coorg of Karnataka (India) use *Aegle marmelos* (L.) Corr., *Bridelia scandens* (Roxb) Willd., *Cyclea peltata* (Lam.) HK.f.&Th., *Coriandrum sativum* L, *Sida rhombifolia* L. subsp. *retusa*, *Terminalia chebula* (Gaertn.) Retz. as pain relievers. Jenukurba tribe of Mysore (India) *Basella rubra* (L.) to cure mouth ulcer; *Boehaervia diffusa* (L.) in diabetes; *Cocculus hirsutus* (L.) in sprain; *Meyna laxiflora* in mumps; *Pavetta indica* (L.) in toothache and *Sida spinosa* (L.) to stop early graying of hairs (Kshirsagar and Singh, 2000).

Gujjar tribe of Uttar Pradesh use *Dalbergia sissoo* Roxb. *Abutilon indicum* L. to cure leucorrhoea; *Ficus racemosa* L. and leaf extract of *Achyranthus aspera* L. with seeds of *Piper nigrum* to cure piles; decoction of flowers of *Butea monosperma* (Lam.) Taub. to remove blockage during urination; *Celastrus paniculatus* Willd., (Khanna and Kumar, 2000).

Cleome viscosa L. is antihelminthic and also given in diarrhoea. Smoke of its leaves repel mosquitoes. Its leaf extract has larvicidal effect on *Anopheles stephensi*, a vector of malaria (Saxena et al., 2000). Gaddi tribes (migratory shepherds) use veterinary medicinal plants like *Alnus nepalensis* (D. Don.) to cure sprains, *Mentha longifolia* (L.) as wound healer, *Vanda tessellate* (Roxb.) for general weakness and *Zingiber roseum* (Rosc.) in the treatment of cough in cattle (Singh and Kaushal Kumar, 2000).

Tribal and non-tribal communities of West Bengal use roots of *Aegle marmelos* (L.) Corr. *Aristolochia indica* L., *Euphorbia neriifolia* L., and *Ocimum sanctum* L. for their anti-venom properties (Maiti and Mishra, 2000). Tribal people of Nalgonda (Andhra Pradesh), India use crude veterinary plant drugs obtained from *Adhatoda vasika* Nees., *Cissus quadrangularis* L., *Whithania somnifera* (L.) Dunal., *Wrightia tinctoria* R.Br. and *Dolichandrone falcata* (DC.) Seem. in treating Anthrax disease; *Cassia italica* (Mill) Andr., *Calotropis gigantea* (L.) R. Br., *Ipomoea turbinate* Lag. *Terminalia chebula* Retz. in constipation (Reddy and Vatsavaya, 2000).

People of Almora (Uttaranchal) use Pteridophytic plant species viz. *Adiantum edgeworthii* (Hook.) Bedd. to cure mouth blisters; *Asplenium dalhousiae* (Hook.) C. Chr. in typhoid; *Lygodium flexuosum* (L.) Sw. in skin diseases and *Tectaria polymorpha* (Wall. ex Hook.) Copel. to cure fever (Pande et al., 2000).

Herbal practitioners of Assam use *Kyllinga brevifolia* Rottb. to treat yellow type of jaundice and *Hydrocotyle rotundifolia* Roxb., *Musa sapientum* to treat red type jaundice (Das and Saikia, 2001). Tribals of Dadra, Nagar Haveli and Daman consume plant species regularly in their everyday diet. Some of them have medicinal values. These are: *Aegle marmelos* (L.) Corr. in treating dysentery, *Citrus medica* L. in sunstroke, leaf extract of *Spinacia oleracea* L. is given for cooling purpose, 'Kavalu' (*Smithia conferta* J.E. Sm.) as pain reliever and *Syzygium cumini* (L.) Skeels. in digestive disorders (Sharma and Singh, 2001). The tribes of Melghat forest (Amaravati) *Abrus precatorius* L. in cough, cold and throat infections; *Clitoria ternatea* L. in chronic cough; *Chlorophytum borivilianum* Sant. & Fern. as health tonic and *Plumbago zeylanica* L. in rheumatism and swelling (Chaudhari and Hutke, 2002). Ethnobotanical knowledge and practices continuously undergo some modification, improvement or change. It is dynamic. For example, *Ageratum conyzoides* L., *Amaranthus spinosus* L., *Asclepias curassavica* L. *Cleome gynandra* L. are some exotic plants

introduced and naturalized in India. The local folk people have discovered some uses in them (Jain, 2005).

Curcuma longa L. is a valuable resource for spice, food, medicine as well as for its symbolic, ceremonial, ritualistic and religious purposes from ancient times in India. In order to overturn the patent given to USA in August 1997, researchers in India carried out a huge survey of literature dealing with the ancient uses of turmeric. This case is an example of how careful ethnobotanical research can help safeguard intellectual property rights (Merlin and Kinsela, 2005).

Ethnomedicinal study offers scope and opportunities for the development of new drugs (Mehrotra and Mehrotra, 2005).

Lichen *Cladonia rangiferina* (L.) Wigg. of alpine regions of West Kameng (Eastern Himalaya) is useful for removing of kidney stones (Rout et al., 2005).

Tribes of Maharashtra use *Canscora decussata* (Roxb.) Roem. & Schult. in treatment of fever, skin diseases and diabetes (Khanna et al., 2005).

Tree worship has been the most simple and convincing method of nature conservation.. There are several trees that are worshiped by Hindus according to 27 natal constellations. For example, Krutika, Chitra, and Sravan constellations are associated with *Ficus recemosa* L., *Aegle marmelos* (L.) Cor., *Calotropis gigantea* (L.) Ait. respectively. There are 28 Buddhas that are worshiped in the form of trees known as 'Wisdom trees'. For example, Buddhas viz. Medhankara, Paduma and Gautama are associated with *Butea monosperma* (Lam) Taub., *Oroxylum indicum* (L.) Vent., *Ficus religiosa* L. respectively (Sane and Ghate, 2006).

People of Bundi (Rajasthan) use household remedies against animal and insect bites. *Datura metel* L. mixed with cows urine are very effective against dog bite (Shekhawat and Batra, 2006).

People of rural area of Uttarkashi (Uttaranchal) India, use plant species in ethnoveterinary medicines. Some useful plants which increase lactation are: *Amaranthus caudatus* L., *Echinocloa crusgalli* (L.) P. Beauv. *Ficus palmata* Forssk., *Glycine max* (L.) Merr., *Grewia optiva* J.R. Dumm. ex Burrett., *Quercus floribunda* Rehder. (Tiwari and Pande, 2006).

Traditional healers of Wayanad (Kerala state) India, use plant species to cure skin diseases viz. ring worm is treated with *Vernonia cinerea* (L.) Less., *Thespesia populnea* (L.) Sol. ex Correa., *Sida rhombifolia* L., *Ocimum basilicum* L., *Jatropha curcus* L., *Jasminum angustifolium* Vahl. and *Elephantopus scaber* L. ; leprosy with *Acacia catechu* Willd., *Cassia fistula* L. and *Tinospora cordifolia* (Willd.) Miers. ex Hook. f. and Thoms. Athletes foot disease is treated with *Anacardium occidentale* L., *Camellia sinensis* (L.) Kuntze., *Colocasia esculenta* (L.) Schott., and *Solanum anguivi* Lam. (Nisha and Sivadasan, 2007).

While treating jaundice, tribes from Nagarjunasagar (Andhra Pradesh) use *Phyllanthus amarus* Schum & Thonn., *Andrographis paniculata* (Burm. f.) Wall. ex Nees., *Argemone Mexicana* L., *Leucas aspera* (Willd.) Link. in different formulations. (Rao et al., 2007).

Bhil tribes of Madhya Pradesh use *Bombax ceiba* L. to cure different diseases. Decoction of root is taken to promote conception and to prevent miscarriages as well as to cure menorrhoea; the extract of its stem bark and flowers is taken in diarrhoea and dysentery, menorrhoea and leucorrhoea and stomach pain during menses. The paste is tied over anus to cure piles. Extract of inner bark is taken to increase sexual potentiality (Jadhav, 2007).

METHODOLOGY

During field work, the local tribe people were requested to accompany into forest. The information about medicinal uses of plants was confirmed by different groups. The methodology of previous workers was adopted (Jain, S. K. and Mugdal, V. 1999; Malhotra et al 2001.) The data was entered in a field notebook

RESULTS AND DISCUSSION

Present work is the result of intensive, systematic, Ethnobotanical exploration of Murbad Tahasil, Dist. Thane. Genera and species of medicinal plants used by tribes of Murbad Tahasil in treatment of human ailments are recorded. Out of total medicinal plants tribe use about 20 genera and species in

stomachache and 17 genera in gastric disorder. Leaves, flowers, fruits, seeds and bark of following plants are employed in curing these two ailments.

(A): Ethnobotanical plant species used in the treatment of stomach ache by tribes of Murbad Tahasil, Thane district (India):

(A1): Thakurs and Katkari people of Murbad Tahasil use roots (powder/decoction) orally in case of stomachache. These plants are:

1. Kurdu : Celosia argentea L. (Fam. Amaranthaceae)
2. Kuda : Wrightia tinctoria R. Br. (Fam. Apocynaceae)
3. Hadang: Eriolaena candollei Wall. (Fam. Sterculiaceae).
4. Hastipada: Elephantopus scaber L. (Fam. Asteraceae) Katkari
5. Wagoti: Capparis zeylanica L. (Fam. Capparaceae) Katkari
6. Ran-ghewda: Paracalyx scariosus (Roxb.) Ali. (Fam. Fabaceae)
7. Vasanvel: Cocculus hirsutus (L.) Theob. (Fam. Menispermaceae)

A2) Thakurs and Katkari people of Murbad Tahasil use flowers orally in case of stomachache: These are:

1. Owa: Trachyspermum ammi (L.) Sprague (Fam. Apiaceae)
2. Dhayti: Woodfordia fruticosa (Linn.) Kurz. (Fam. Lythraceae)

A3) Thakurs of Murbad Tahasil use fruits orally in case of stomachache: These are:

1. Bahawa: Cassia fistula L. (Fam. Caesalpiniaceae)
2. Bartondi: Morinda pubescens J. E. Sm. (fam. Rubiaceae)
3. Murudsheng: Helictres isora L. (Fam. Sterculiaceae)

A4) Thakurs of Murbad Tahasil use seeds orally in case of stomachache: These are:

1. Kuda : Holarrhena pubescens (Buch.-Ham) Wall. Ex G. Don. (Fam. Apocynaceae)
2. Sagargota: Caesalpinia bonduc (L.) Roxb. (Fam. Caesalpiniaceae)
3. Dhawada: Anogeissus latifolia (Roxb. ex Dc.) Guill. & Perr. (Fam. Combretaceae)

A5) Thakurs of Murbad Tahasil use bark orally in case of stomachache: These are:

1. Rohan: Soyimida febrifuga (Roxb.) Juss. (Fam. Meliaceae)
2. Hedu: Haldina cordifolia (Roxb.) Ridsd. (Fam. Rubiaceae)

A6) Thakurs of Murbad Tahasil use leaves orally in case of stomachache: These are:

1. Pandhar: Murayya paniculata (L.) Jack. (Fam. Rutaceae)
2. Harbhara: Cicer arietinum L. (Fam. Fabaceae)
3. Chirmut-fanglu: Hyptis suaveolens (L.) Poit. (Fam. Lamiaceae)

(B) Ethnobotanical plant species used in the treatment of gastric disorder by tribes of Murbad Tahasil, Thane district (India).

B1) Thakurs of Murbad Tahasil use leaves orally in case of gastric disorder: These are:

1. Ramphal: Annona reticulata L. (fam. Annonaceae)
2. Medshingi: Dolichandrone falcate (Wall. ex. DC.) Seem. (Fam. Bignoniaceae)
3. Harbhara: Cicer arietinum L. (Fam. Fabaceae)

B2) Thakurs of Murbad Tahasil use fruits orally in case of gastric disorder: These are:

1. Dhane: Coriandrum sativum L. (Fam. Apiaceae)
2. Jire Cuminum cyminum L. (Fam. Apiaceae)
3. Owa Trachyspermum ammi (L.) Sprague (fam. Apiaceae) Thakur and katkari
4. Tambada Bhopala: Cucurbita maxima Duch. ex Lam. (Fam. Cucurbitaceae)
5. Limbu: Citrus aurantifolia (Christm and Panz.) Swing. (Fam. Rutaceae)
6. Ghotvel: Smilax zeylanica L. (Fam. Smilacaceae)

B3) Thakurs of Murbad Tahasil use flowers orally in case of Gastric disorder: These are:

1. Bahawa: Cassia fistula L. (Fam. Caesalpiniaceae)
2. Palas: Butea monosperma (Lam.) Taub. (Fam. Fabaceae)
3. Palashi Butea superba Roxb. ex Willd. (Fam. Fabaceae)
4. Dhayti: Woodfordia fruticosa (Linn.) Kurz. (Fam. Lythraceae)

B4) Thakurs of Murbad Tahasil use seeds orally in case of Gastric disorder: These are:

1. Dhawada: Anogeissus latifolia (Roxb. ex Dc.) Guill. & Perr. (Fam. Combretaceae)

- [19]. Nisha, V.M. & Sivadasan, M.(2007) Ethnodermatologically significant plants used by traditional healers of Wayanad district, Kerala. *Ethnobotany*19: 1&2 pp55-61
- [20]. Pande, H.C., Bhaskar Datt and Pande, P.C.(2000)Notes on the ethnomedical aspect of some common Pteridophytes of Almora district of Kumaon Himalaya (Uttaranchal.) *Ethnobotany* 12 : 1&2 page-56 to 59.
- [21]. Rao, P.P., Reddy, P.R. & Reddy, K.J.(2007) Some ethnomedicines used by Chenhuc in the treatment of jaundice from Nagarjunasagar Srisailam Tiger Reserve (NSTR), Andhra Pradesh. *Ethnobotany*19: 1&2 pp 128-130
- [22]. Reddy,C.S. and Vatsavaya, S.R.(2000)Folklore biomedicine for common veterinary diseases in Nalgonda district,Andhra pradesh,India.*Ethnobotany*12:113-117
- [23]. Rout, J., kar, A. & Upreti, D.K.(2005) Traditional remedy for kidney stones from a high altitude lichen; *Cladonia rangiferina* (L.) Wigg (Reindeer moss) of Eastern Himalaya. *Ethnobotany* 17:1&2 pp164-166
- [24]. Sane, H. & Ghate, V.(2006) Sacred conservation practices at species level through tree worship. *Ethnobotany* 18:1&2 PP46-52
- [25]. Saxena B.R.;Koli,M.C. and Saxena, R.C.(2000)Preliminary ethnomedical and phytochemical study of *Cleome viscosa* L.*Ethnobotany*12:47-50
- [26]. Shekhawat, D. & Batra, A.(2006) Ethnobotany of some household remedies used against animal and insect bite in Bundi district, Rajasthan.*Ethnobotany*18:1&2 pp131-134
- [27]. Singh,K.K. and Kaushal Kumar(2000)Observations on Ethnobotany medicine among Gaddi Tribe of Kangra valley,Himachal pradesh.*Ethnobotany*12:42-44
- [28]. Tiwari, L. & Pandey, P.C.(2006) Ethnoveterinry plants of Uttarkashi District, Uttaranchal, India. *Ethnobotany* 18:1&2 pp139-144

Publication Language	English
Publisher	Maharaja Sayajirao University of Baroda
ISSN	0025-0422
E-ISSN	NA
Discipline	Science
Subject	Agricultural and Biological Sciences (all) , Biochemistry, Genetics and Molecular Biology (all) , Engineering (all) , Mathematics (all)
Focus Subject	General Agricultural and Biological Sciences , General Biochemistry, Genetics and Molecular Biology , General Engineering , General Mathematics
UGC-CARE coverage years	from June-2019 to Present



Sadley
Principal
Nutan Arts College, Rajapur
Tal. Sangamner Dist, A.Nagar

Sr.No.	Journal Title	Publisher	ISSN	E-ISSN	UGC-CARE coverage years	Details
1	Wesleyan Journal of Research	Bankura Christian College	0975-1386	NA	from June-2019 to January-2023	Discontinued from Jan 2023

Showing 1 to 1 of 1 entries

Previous Next

Soddy
Principal
Nutan Arts College, Rajapur
Tal. Sangmaner Dist, A. Nagar

Search:

Sr.No.	Journal Title	Publisher	ISSN	E-ISSN	UGC-CARE coverage years	Details
1	Journal of the Maharaja Sayajirao University of Baroda	Maharaja Sayajirao University of Baroda	0025-0422	NA	from June-2019 to Present	View

Showing 1 to 1 of 1 entries

Previous Next



Dadlan
Principal
Nutan Arts College, Rajapur
Tal. Sangamaner Dist, A.Nagar

PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN TREATMENT OF
HUMAN DIARRHOEA AND DYSENTERY.

¹Kadlag S.D., ²Varpe S.N., ³Gadakh V.D., ⁴Bharitkar D.V., ⁵Suroshe, V. M.,
^{1,2,3,4}, Nutan Arts, Commerce & Science College, Rajapur Tal Sangamner, Maharashtra,
⁵JSM's Jr. College Shivle, Taluka- Murbad, Dist. Thane, Maharashtra. India.
kadlagsubhash@gmail.com

ABSTRACT

'Ethno botany' word was coined for the study of plant species used by aboriginal people (Hershberger, 1895). Ethnic's knowledge of plant resources is documented in 'Ethno botany'. Ethno botany is a promising field of research. Ethno botanical exploration of Murbad Tahasil, Dist.Thane was done. Various medicinal plants employed by tribes of Murbad Tahasil in curing of human diseases were recorded. Out of total medicinal plants, Thakur and Katkari tribes use about 20 species in the treatment of diarrhoea and dysentery.

Key words: Ethno botany, diarrhoea and dysentery, medicinal plants.

INTRODUCTION

The tribes living in remote hilly forest areas and villages of Tahasil Murbad mostly have to depend upon home remedies. Main medicine man of the village has enough knowledge of uses of medicinal plants. 'Medicine men' do not disclose their knowledge to other people. The practice of employing folk medicines to cure human diseases descends down ancestrally. It is possible that such knowledge of medicinal plant remedies may get vanished with 'medicine man'. We tried to collect data of medicinal plants from these medicine men. Thakur, Warali, Katkari, Koli are the tribes in Thane district (Jagtap and Singh, 2002).

Murbad Tahasil is mountainous which lies approximately at 19° 31' N and 73° 35' E (Collectorate of Thane District, 2014). The forests are of tropical mixed deciduous and semi-evergreen types. These forests are reserved, protected and cover an aggregate area of 36256.122 ha. The tribal people collect different materials viz. flowers, fruits, nuts, bark, shoots, tubers, roots, leafy vegetables, gum and honey from the forests. Katkari is a nomadic tribal group and are socially and economically backward.

REVIEW OF LITERATURE

Huyin et al., (2000) recorded *Blumea balsamifera* (family Compositae) which is used in Thailand in case of skin itching. Chinese have been using it in indigestion problems. Saxena et al., (2000) recorded use of *Cleome viscosa* L. (Family Cleomaceae) in curing diarrhoea. Smoke of its leaves can be used to repel mosquitoes. Reddy and Vatsavaya, (2000) recorded that the tribal people of Nalgonda (Andhra Pradesh state, India), use *Adhatoda vasica* Nees., *Cissus quadrangularis* L., *Withania somnifera* (L.) Dunal., *Wrightia tinctoria* R.Br. and *Dolichondrone falcata* (DC.) Seem. in treating Anthrax disease of cattle. *Cassia italica* (Mill) Andr. , *Calotropis gigantea* (L.) R. Br. And *Terminalia chebula* Retz. are used in curing constipation. Sharma and Singh, (2001) recorded that the tribal people of Dadra, Nagar Haveli and Daman (India) consume varieties of plant species in their regular diet. They use *Aegle marmelos* (L.) Corr. in treating dysentery and *Syzygium cuminii* (L.) Skeels. in digestive disorders.

METHODOLOGY

Extensive field work was done into the forest. The medicine men or tribal people were requested to accompany us in the field work. The information about medicinal uses of plants was confirmed. The methodology of previous workers was adopted (Jain, S. K. and Mugdal, V. (1999) and Malhotra *et al* (2001.). We entered the data in a field notebook.

RESULTS AND DISCUSSION

Present work is the result of Ethnobotanical exploration of Murbad Tahasil, Dist. Thane. We recorded medicinal plants used by tribes of Murbad Tahasil in treatment of various human diseases. Out of total medicinal plants tribe use about 20 species in stomachache and 18 plant species in diarrhoea and dysentery. Enumeration of these plant species is given below.

1. Cissampelos pareira L. var **hirsuta** (Buch.-Ham. ex DC.) Forman. in Kew Bull. 22: 356. 1968. *C. pareira* L., Sp. Pl. 1031. 1753; Cooke, Fl. Pres. Bombay 1: 24. 1958 (Repr. Ed); Kulkarni in Singh et al. Fl. Maharashtra St. Dicot. 1: 178. 2000. Venivel/ Padvel.

Twiner; hairy; leaves ovate, reniform, peltate; flowers greenish yellow, minute; drupes obovoid, transversely ridged.

Family : Menispermaceae

Fls & Frts : July-November.

Distrib : Frequent in hedges in forest area. Gorakhgad (NACSA) 279.

Uses : Root infusion, one spoon twice a day is used to check dysentery in kids.

Literature : Jain (1991) -(rt) dysentery.

2. Cocculus hirsutus (L.) Theob. in Mason, Burma ed. Theob. 2: 657.1883; Santapau, Fl. Khandala ed. 3, 4, 1967; Kulkarni in Singh et al. Fl. Maharashtra St. Dicot.1: 179. 2000; *C. villosus* DC., Syst. 1:525, 1818; Cooke, Fl. Pres. Bombay 1: 22. 1958. (Repr. ed.). Vasanvel, Taan, Para-vel, Jaljamni.

Scandent or straggling undershrub; hirsute branches; leaves villous; male flowers- in axillary cymose panicles, female flowers- in clusters; drupes reddish.

Family : Tiliaceae

Fls & Frts : Feb - June.

Distrib : Common in deciduous forest. Kheware (NACSA), 015

Uses : Stomachache: root infusion with water is taken orally; Stem- is tied over waist to control dysentery in kids.

Literature : Jain (1991) -(px) dysentery, (st) stomach disorder.

3. Stephania japonica (Thunb.) Miers. Hook, f. and Thoms. in Hook, f. Fl. Brit, India 1:103. 1872; Cooke, Fl. Pres. Bombay 1: 23. 1958 (Repr. Ed); Kulkarni in Singh et al. Fl. Maharashtra St. Dicot. 1: 181. 2000. Pahad vel.

Twining shrub; leaves broadly ovate, base cordate, apex acute- acuminate; flowers minute, greenish-yellow; drupes solitary, obovoid, red.

Fls & Frts : July - February.

Distrib : Infrequent in hills of forests. Gorakhgad (NACSA) 280.

Uses : 2-4 spoonful leaf juice in water is given in dysentery.

Literature : Sharma and Singh (2001) -(roots) in dysentery.

4. Abelmoschus esculentus (L.) Moench. Meth. Pl. 617. 1794; Mast. in Hook, f. Fl. Brit, India 1: 343. 1874; Cooke, Fl. Pres. Bombay 1: 119. 1958 (Repr. Ed); Venkanna and Das Das in Singh et al. Fl. Maharashtra St. Dicot. 1: 334. 2000. Bhendi.

Herbs or undershrubs, branches with stiff hairs; Leaves variously 3-9 lobed; Flowers axillary, solitary, corolla yellow with reddish centre; Capsules 5-angled, woody at maturity; seeds greenish-brown, reniform.

Family : Malvaceae

Fls & Frts : Throughout the year.

Distrib : Commonly cultivated in backyards. Zapwadi (NACSA) 273.

Uses : It is best used against dysentery.

Literature : Jain (1991) - (fr) vegetable.

5. Sterculia urens Roxb. Pl. Corom. 1: 25, t. 24. 1795; Mast. in Hook, f. Fl. Brit, India 1: 355. 1874; Cooke, Fl. Pres. Bombay 1:131.1958 (Repr. Ed); Moorthy in Singh et al. Fl. Maharashtra St. Dicot.1:359. 2000. Kandol, pandruk, Bhutkes.

Tree; bark shining- softly pubescent; Leaves 3-5 lobed, velvety hairy; flowers in terminal panicles; follicles 5-6, densely covered with dark purple, stinging, shining hairs; seeds 3-6, oblong black.

Family : Sterculiaceae

Fls & Frts : December- May.

Distrib : Common in dry deciduous forest. Walhivare (NACSA) 041.

Uses : Gum is used to check diarrhoea..

Literature : Naidu et al, (2008) -(bk) rheumatism, (gum) dysentery.

6. *Triumfetta rhomboidea* Jacq. Enum. Syst. Pl. 22. 1760; Mast in Hook, f. Fl. Brit, India 1: 395. 1874; Cooke, Fl. Pres. Bombay 1: 156. 1958 (Repr. Ed); Pradhan in Singh et al. Fl. Maharashtra St. Dicot. 1: 399. 2000. Thinjira.

Herbs; Leaves variable, rhomboid-ovate, stellately hairy; Flowers yellow in cymes.

Family : Tiliaceae

Fls & Frts : July-December.

Distrib : Common on roadside and hill slopes. Khutal (NACSA) 315

Uses : Roots and leaves are used in curing dysentery.

Literature : Jain (1991) -(lf) dysentery, (st) fibre.

7. *Citrus aurantifolia* (Christm and Panz.) Swing. in J. Wash. Acad. Sci. 3: 465. 1913; Hook, f. in Hook, f. Fl. Brit, India 1: 515. 1875; Cooke, Fl. Pres. Bombay 1: 201. 1958 (Repr. Ed); Jadhav in Singh et al. Fl. Maharashtra St. Dicot. 1: 483. 2000. Limbu.

Thorny shrubs or small trees; Leaves oblong to elliptic-ovate, Petioles distinctly winged; Flowers white, solitary or few in axillary; Fruits globose, green, yellow when ripe.

Family : Rutaceae

Fls & Frts : Throughout year.

Distrib : Cultivated for its fruits. Shivle (NACSA) 328.

Uses : Fruit juice with tea is taken in stomach disorder.

Literature : Jain (1991) -(fr) diarrhoea.

8. *Soymida febrifuga* (Roxb.) Juss. in Mem. Mus. Hist. Nat. 19: 251. 1830; Hiern in hook. F. Fl. Brit. India 1: 567. 1875; Cooke, Fl. Pres. Bombay 1: 228. 1958 (Repr.); Moorthy in Singh et al. Fl. Maharashtra st. Dicot. 1: 508. 2000. Rohan.

Tree; Leaves crowded towards the ends of branches; Leaflets 3-6 pairs; Flowers in axillary and terminal panicles; Capsules woody, 5-valved; Seeds winged.

Family : Meliaceae

Fls & Frts : March-May

Distrib : Rare in hill forests. Gorakhgad (NACSA) 284.

Uses : Bark decoction is given orally twice a day to cure dysentery and stomachache.

Literature : Jain (1991) -(bk) dysentery.

9. *Ziziphus mauritiana* Lam. Encycl. 3:319. 1789; Law. in Hook, f. Fl. Brit, India 1: 632. 1875; Cooke, Fl. Pres. Bombay 1:256.1958 (Repr. Ed); Pradhan in Singh et al. Fl. Maharashtra St. Dicot.1:544. 2000. Bor.

Large shrubs or small trees; Leaves ovate- elliptic, glabrous above, dusty beneath; Flowers greenish yellow; Drupes globose, red when ripe, stone longitudinally grooved.

Family : Rhamnaceae

Fls & Frts : September- January

Distrib : Common on barren hill slopes. Shivle (NACSA) 325.

Uses : Bark- Crushed in water and infusion prepared is consumed to control dysentery.

Literature : Kadel and Jain (2006) -(rt) fmd. Jain (1991)- (fr) edible, (px) dysentery.

10. *Mangifera indica* L. Sp. Pl. 200. 1753; Hook, f. Fl. Brit, India 2: 13. 1876; Cooke, Fl. Pres. Bombay 1:291.1958 (Repr. Ed); Prasanna in Singh et al. Fl. Maharashtra St. Dicot.1:584. 2000.Amba.

Large evergreen tall tree; leaves oblong- lanceolate, coriaceous; flower polygamous in terminal panicles; drupes fleshy, pyriform with hard, fibrous stones.

Family : Anacardiaceae

Fls & Frts : January- June

Distrib : Common in deciduous forest. Kheware (NACSA), 142.

L.Myrtaceae), root powder of Padvel (Cissampelos pareira L. var hirsuta Buch.-Ham. ex DC.) Forman.Menispermaceae) and Thinjira (Triumfeta rhomboidea Jacq.Tiliaceae).They tie stems of Vasanel (Cocculus hirsutus (L.) Theob.Menispermaceae) and Murud- sheng (Helictres isora L.Sterculiaceae); flowers of Jaswand (Hibiscus rosa-sinensis L.Malvaceae) ;fruits of Bhendi (Abelmoschus esculentus (L.) Moench.Malvaceae) and seeds of Kuda (Holarrhena pubescens (Buch.-Ham) Wall. Ex G. Don.Apocynaceae).

ACKNOWLEDGEMENT

I express my sincere sense of gratitude to my research guide Dr. Gaykar B. M. and Co-guide Dr. Khose R.G. former Head of the Botany Department for their keen interest in the subject.express my gratitude to Hon. Management of Pragatik Shikshan Sanstha Rajapur ,Tal.Sangamner Dist.Ahmednagar.

REFERENCES

- [1]. Collectorate of Thane District (2014) Administrative setup, Thane at Glance. www.Thane.nic.in
- [2]. Hershberger, J.W. (1895) Some new ideas. Philadelphia Evening Telegraph. In Jain, S.K. & Mudgal, V.(1999) A handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehra Dun, India.
- [3]. Huai Huyin,Pei Shengji &XuJianchu(2000)A comparision of some commonly used medicinal plants between the Lahu people in Thialand and China.Ethnobotany12 : pages 8 to 11
- [4]. Jagtap A. P.&.Singh N.P.(2002) Biodiversity of the Western Ghats of Maharashtra. Current Knowledge.
- [5]. Jain, S.K.(1991)Dictionary of Indian Folk Medicine and Ethnobotany. Deep Publications, New Delhi.
- [6]. Jain, S.K. & Mudgal, V.(1999) A handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. 5.
- [7]. Jain, S.K.(2005) Dynamism in Ethnobotany. Ethnobotany 17:1&2 pp20-23
- [8]. Kadel, C. and Jain, A.K.(2006) Plants used in ethnoveterinary practices in Jhabua District, Madhya Pradesh.Ethnobotany18(1&2):pp 149-152.
- [9]. Khyade, M.S., Awasarkar, U.D., Deshmukh, R.R. and Petkar, A.S.(2010)Ethnobotanical Reports about Few Important Diseases from Akole Tehasil of Ahmednagar District (MS) India. Asian. J. Exp. Biol. Sci. Society of Applied Sciences. ISSN 0975-5845. <http://www.ajcbs.com>
- [10]. Malhotra, K.C., Gokhale, V., Chatterjee, S. and Shrivstav, S. (2001) Cultural and Ecological Dimensions of Sacred groves in India. Indian National Science Acdamy, New Delhi and Indira Gandhi Rashtriya Manav Sangrahalaya,Bhopal.1- 30.
- [11]. Murugesan, M.; Balasubramaniam, V. & Arumugasamy, K.(2011)Ethnomedicinal diversity of Malasaras in Velliangiri hills, Wesern Ghats, Tamil nadu.Ethnobotany23 (1&2) pp89-99.
- [12]. Naidu, B.V.A.R., Reddi, T.V.V.S. & Prasanthi, S.(2008)Folk herbal remedies for rheumatoid arthritis in Srikakulam district of Andhra Pradesh. Ethnobotany 20 (1&2) 76-79.
- [13]. Reddy,C.S. and Vatsavaya, S.R.(2000)Folklore biomedicine for common veterinary diseases in Nalgonda district,Andhra pradesh,India.Ethnobotany12:113-117
- [14]. Saxena B.R.;Koli,M.C. and Saxena, R.C.(2000)Preliminary ethno medical and phytochemical study of Cleome viscosa L.Ethnobotany12:47-50
- [15]. Sharma, P.P. & Singh,N.P.(2001)Ethnomedicinal uses of some edible plants in Dadra, Nagar Haveli and Daman (U.T.) Ethnobotany13(1&2)pages 121-125.
- [16]. Singh, N. & Chauhan, S.V.S.(2004)Studies on some leaves (Patra) used for worship in Brij Manda Ethnobotany16(1&2)pp69-71.

**PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN TREATMENT OF
VARIOUS HUMAN DISEASES SUCH AS TUBERCULOSIS, LEPROSY, HERPES,
DIABETES AND ULCERS.**

¹Bharitkar D.V., ²Varpe S.N., ³Gadakh V.D., ⁴Kadlag S.D., ⁵Suroshe V.M.

^{1,2,3&4} Nutan Arts, Commerce & Science College, Rajapur, Maharashtra, India.

⁵JSM's Jr. College Shivale, Taluka- Murbad, District Thane, Maharashtra. India.

kadlagsubhash@gmail.com

ABSTRACT

Murbad tahasil is rich in floristic as well as ethnic diversity. Murbad is mountainous and tribal populated Tahasil of Thane District lying approximately at 19° 31' N and 73° 35' E (Collectorate of Thane District, 2014). It includes about 906.36 sq. km area, 207 villages and 159 'padas'. 'Ethnobotanical exploration of Murbad Tahasil, Dist.Thane was done. Various medicinal plants employed by tribes of Murbad Tahasil in curing of human diseases such as Tuberculosis, leprosy, Herpes, Diabetes and ulcers were recorded.

Key words: Ethno botany, medicinal plants, human diseases.

INTRODUCTION

There are many sub-disciplines of Ethnobotany. These are viz. ethno agriculture, ethno ecology, ethno medico botany, ethno pharmacology, ethnopteridlogy, ethnobryology, ethno-phytotaxonomy and ethno-veterinary (Jain 2001). Early origin of traditional medicine viz. Ayurveda, Unani and Siddha must have had their foundation in Ethno botanical folklore. The people in tribal areas and remote villages mostly depend upon the folk medicines and household remedies. The practice of herbal medicines to cure different ailments has descended down ancestrally. Medicine men do not easily disclose their knowledge to others. Therefore, the valuable information may be vanished with them. The tahasil Murbad of Thane district comprises three major tribes viz. Thakur, Mahadev Koli, Katkari and several ethnic groups that have been engaged in conservation practices. The medicine men generally are experts in one or other diseases and inhabit in remote areas. Their knowledge needs to be assembled and recorded. In many cases like scorpion sting, snakebite and rabid dog bites the practitioner administers drugs accompanied with 'jantras' and 'mantras'. They believe that both of these things act supplementary and complementary to each other. Many times, this practice causes death of the person.

REVIEW OF LITERATURE

Ethnobotanical knowledge is helpful in treatment and prevention of diseases and provide a wide scope and opportunities for bioprospecting in drugs/chemicals and gene prospecting. For example, medicines viz. NICOSAN™ (HEMOXIN™) and 'Ajawaron HF' used in treating sickle cell anaemia were developed through ethnobotanical investigations in Nigeria (Idu, 2009).

Scientific approach must be followed in Ethnobotanical studies. It must provide proper information, statistical analysis to support the data and field observations. Related socio-economic aspects, effects on environment and conservation of biodiversity must be taken into consideration. Ethics demand protecting the knowledge base. Benefits should be shared resulting from commercial use of the tribal knowledge (Idu, 2009).

Local people of Deogarh (Orissa) use plant species for treating skin diseases. These are: Argemone Mexicana L., Azadirachta indica A. Juts. and Helicetres isora L. to treat 'Scabies'; Hemidesmus indicus (L.) R.Br., Streblus asper Lour. to cure 'Eczema'; Boerhaavia diffusa L., Combretum decandrum Roxb., Tinospora cordifolia (Willd.) Miers. ex Hook. F. and This. to treat 'Acne and Pimples' (Sahu et al., 2009).

Many ethnomedicinal plants are critically endangered / threatened or near threatened categories as per IUCN categorization norms. Chenchu tribe of Nallamalai (Andhra Pradesh) use species viz. *Christella dentata* (Forssk.) Brownsey & Jermy., *Careya arborea* Roxb. for curing cough and cold; *Piper attenuatum* Buch.Ham. ex Miq., *Piper nigrum* L. for curing skin diseases; *Ipomoea mauritiana* Jacq., *Curculigo orchioides* Gaertn. to treat male impotency; *Glycosmis cochinchinensis* Pierre., *Entada pursaetha* DC. as contraceptives and *Trichosanthes cucumerina* L. for cardiac problems. (Yasodamma et al., 2009).

People of Hmar tribe of Cachar (Assam) use plant species against various diseases of animals. Juice of Onion bulb, paste of *Annona muricata* L., *Blechnum orientale* Lill., *Butea monosperma* (Lamk.)Taub. and bulb extract of *Crinum amoenum* Roxb. to cure tongue infections, to remove off lice, to keep insects off hens, as wound healer and to cure inflated stomach respectively (Nath and Choudhary, 2009).

Mishing community of Gohpur (Assam) has developed an anti-rheumatic plaster by mixing plants viz. *Tinospora cordifolia* (Willd.) Miers. ex Hook. f. and Thom., *Amphineuron extensum* (Blume.) Moore., *Hibiscus rosa-sinensis* L., *Gossypium arboretum* L., *Litsea salicifolia* Roxb., *Machilus bombycina* King., *Moringa oleifera* Lam. in appropriate quantities and the fresh earth mound of white ants with a little salt thoroughly. Plaster is applied and then covered by leaf of *Musa sapientum* L. (Borah et al., 2009).

Tribals and rurals in East Godavari district (Andhra Pradesh) traditionally use plant species for the treating bites and scorpion stings. Mantra and tantra are used to invoke the Gods and mesmerize the patient. They use *Cassia auriculata* L., *Abrus precatorius* L., *Tiliacora acuminata* (Lam.) Miers., *Plumeria alba* L., *Cymbopogon flexuosus* (Nees ex Steud.) Wats. for snake bite; root paste or leaf juice of *Acalypha indica* L., *Allium cepa* L., *Vigna trilobata* (L.) Verdc. *Selaginella repanda* (Desv. ex Polr.) Spr. *Ruellia tuberosa* L., *Ocimum basilicum* L. *Diplocyclos palmatus* (L.) Jeffrey. for the Scorpion stings and *Crotalaria laburnifolia* L., *Colocasia esculenta* (L.) Schott & Endl. , *Cleome monophylla* L. in insect bites (Suneetha et al., 2009).

Tribal and rural folklore of Mayurbhanj (Orissa) treat asthma with *Terminalia arjuna* (Roxb. ex DC.) W. & A., *Syzygium cumini* (L.) Skeels.; bark decoction of *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Bad. is used to regularize menstrual cycle and bark of *Gastonia scholaris* L. is used in malaria (Rout et al., 2009).

Bhil tribe of Ratlam (Madhya Pradesh) use leaves of plant species for the treatment of different ailments. To suppress boils and swellings, leaves of *Barleria prionitis* L., *Butea monosperma* (Lamk.) Taub., *Citrus limon* (L.) Burm. f., *Datura stramonium* L., *Euphorbia neriifolia* L., *Ipomoea carnea* Jacq. Subsp. *Fistulosa* (Mart. ex Choicy.) Austin. *Jasminum sambac* (L.) Ait., *Jatropha curcas* L., *Kalanchoe pinnata* (Lam.) Pers., *Papavar somniferum* L., *Physalis minima* L., *Quisqualis indica* L. are used ; to get relief in toothache leaves of *Calatropis procera* (Ait.) R.Br., *Mangifera indica* L., *Psidium guajava* L. *Tridax procumbens* L. are used (Jadhav, 2009).

Tangkhul-Naga tribe of Ukhrul (Manipur) use *Ageratum conyzoides* L., *Allium hookerii* Thw., and *Auricularia delicata* (Fr.) Henn. in stomach disorders; *Emillia sonchifolia* (L.) DC., *Eupatorium adenophorum* Spreng., *Lantana camara* L., and *Musa paradisiaca* L. in diarrhea and dysentery; *Ocimum americanum* L., *Tinospora cordifolia* (Willd.) Miers. ex Hook. f. and Thoms in diabetes treatment (Salam et al., 2011).

In Bihar exotic species *Vernonia amygdalina* Del. is used against diabetes, cough, fever, malaria and as a blood purifier (Kumar and Varma, 2011).

Andrographis paniculata (Burm.f.) Wall. ex Nees., *Celastrus paniculata* Willd., *Flacourtia indica* (Burm. f.) Merr. *Mucuna puriens* (L.) DC., *Pongamia pinnata* (L.) Pierre. and *Xanthium strumarium* L. are the promising plant species of Adilabad district (Andhra Pradesh) used for curing leucorrhoea (Swamy and Reddi, 2011). *Bombax ceiba* D.C. has anti-HIV, anti-inflammatory, hepatoprotective, anticancerous, anti-helicobacter, analgesic and antioxidant, hypotensive, hypoglycemic and antimicrobial properties (Verma, 2011).



People of Salem district of Tamilnadu use plants in treatment of diseases. *Andrographis alata* Nees., *Gymnema sylvestre* R.Br. and *Cyanodon dactylon* Pers. to cure diabetes; *Abutilon indicum* (L.) Sweet., *Aristolochia indica* L., *Argemone mexicana* L., *Asparagus racemosus* Willd. and *Azadirachta indica* A. Juss. to cure leprosy; jaundice is treated with *Argemone Mexicana* L., *Eclipta prostrata* L., *Phyllanthus amarus* L., *Boerhavia diffusa* L. and *Cleome viscosa* L. (Alagesaboopathi , 2011).

METHODOLOGY

Extensive field work was done in the forest area with the help of local tribe people. The information about uses of plants in dying and tanning was confirmed from the discussion with the tribal. The ethnobotanical methodology of previous workers was followed (Jain, S. K. and Mugdal, V. 1999; Malhotra *et al* 2001.). The data of plants was entered in a field notebook

RESULTS AND DISCUSSION

We consulted many medicine men in Murbad tahasil. Different tribes of Murbad Tahasil use medicinal plants in curing of human diseases such as Tuberculosis, leprosy, Herpes, Diabetes and ulcers. These are given below.

Plant species used in the treatment of major diseases viz. TB, diabetes, Harpies, Leprosy and Ulcer by tribes of Murbad Tahasil, Thane district (India)

Tuberculosis:

Thakur and Katkari people prepare decoctions/powder of roots 'Vilayati' (*Argemone Mexicana* L. Hook, f. and Thoms., family: Papaveraceae); 'Tetar' [*Oroxylum indicum* (L.) Vent) Family: Bignoniaceae] and 'Kuda' (*Wrightia tinctoria* R. Br.; Apocynaceae) and give orally to the patients. They and other tribe people also use roots and flowers of 'Bhuiringani' (*Solanum virginianum* L.) family Solanaceae.

Diabetes:

Thakurs and Katkari people use powder of wood of 'Bibla' (*Pterocarpus marsupium* Roxb. Family Fabaceae); they and other tribes use leaves of 'Adulsa' [*Justicia adhatoda* (L.) Family Acanthaceae]; 'Bedki' [*Gymnema sylvestre* (Retz.). R. Br., family Asclepiadaceae]; 'Medshingi' [*Dolichandrone falcata* (Wall. ex. DC.) Seem. family Bignoniaceae] while Tangkhul-Naga tribe of Ukhrul (Manipur) use *Ocimum americanum* L., *Tinospora cordifolia* (Willd.) Miers. ex Hook. f. and Thoms in diabetes treatment

All tribes employ pods of 'Bahawa' [*Cassia fistula* L. family Caesalpiniaceae]; stem branches of 'Gulvel' [*Tinospora cordifolia* (Willd.) Miers. Family Menispermaceae]; seeds of 'Jambhul' [*Syzigium cumini* (L.) Skeels family Myrtaceae] and rhizomes of 'Koshta' [*Costus speciosus* (Koen.) J. E. Smith] family Zingiberaceae] in treating diabetes.

Herpes:

Medicine men of Thakur and Koli tribes employ 'Bandhala' (*Viscum angulatum* Heyne ex DC. family Viscaceae). Extracts or powder are applied externally.

Leprosy :

Thakur, Katkari and medicine men of other tribes use pods of Bahawa *Cassia fistula* L. Caesalpiniaceae and bark of 'Gulvel' [*Tinospora cordifolia* (Willd.) Miers. Family Menispermaceae]. while tribal people of Salem district of Tamilnadu *Abutilon indicum* (L.) Sweet., *Aristolochia indica* L., *Argemone mexicana* L., *Asparagus racemosus* Willd. and *Azadirachta indica* A. Juss. to cure leprosy

Ulcer

Thakurs give orally bark powder of 'Athrun' [*Flacourtia indica* (Burm. F.) Merrill. family Flacourtiaceae] in the treatment of ulcers.

ACKNOWLEDGMENT



We express our sincere sense of gratitude to my research guide Dr. Gaykar B. M. and Co-guide Dr. Khose R.G. former Head of the Botany Department for their keen interest in the subject, scholarly inspiration, efficient guidance, constant encouragement and pertinent criticism during the course of present investigations, which always kept my research work in progress and Hon. Management of Pragatik Shikshan Sanstha Rajapur, Tal.Sangamner Dist. Ahmednagar.

REFERENCES

- [1]. Alagesaboopathi, C. (2011) Ethnobotanical Studies on useful Plants of Kanjamalai Hills of Salem district of Tamil Nadu, Southern India.
- [2]. Scholars research library. Archives of Applied Science Research, ISSN 0975-508X <http://scholarsresearchlibrary.com/archive.html>35: 532-539
- [3]. Borah, S., Das, A.K., Boruh, A.M. & Borah, J.(2009)Ethnomedicinal plants used by Mishing communities for analgesic and anti-inflammatory properties In India.Ethnobotany21 (1&2);pps66-69.
- [4]. Collectorate of Thane District (2014)Administrative setup, Thane at Glance. www.Thane.nic.in
- [5]. Idu, M.(2009)Ethnobotany in Nigeria: Retrospects and prospects. Ethnobotany 21 (1&2) :pps25-31
- [6]. Idu, M.(2009)Current Trends in Ethnobotany.Tropical Journal of Pharmaceutical Research.University of Benin, Benin City, 300001 Nigeria. <http://www.tjpr.org> 8 (4):295-296
- [7]. Jadhav, D.(2009)Ethnomedicinal plants used in leaf therapy in Ratlam district (Madhya Pradesh).Ethnobotany.21(1&2):pp84-90.
- [8]. Jain, S.K.(2001)Ethnobotany in Modern India Phytomorphology Golden Jubilee Issue pps 39-54.
- [9]. Jain, S.K. & Mudgal, V.(1999) A handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. 5.
- [10]. Kumar, S. and Varma, S. K.(2011)Ethnobotanical investigations on Vernonia amygdalina (Asteraceae) in Bihar. Ethnobotany23 (1&2):pp135-137.
- [11]. Malhotra, K.C., Gokhale, V., Chatterjee, S. and Shrivastav, S. (2001) Cultural and Ecological Dimensions of Sacred groves in India. Indian National Science Academy, New Delhi and Indira Gandhi Rashtriya Manav Sangrahalaya,Bhopal.1- 30.
- [12]. Nath, M. and Choudhary, M.D. (2009)Ethnoveterinary practices by Hmar tribe in Cachar District, Assam.Ethnobotany21 (1&2):pp61-65.
- [13]. Rout, S.D., Panda, T. and Mishra, N.(2009)Ethnobotanical studies of Similipal Tiger Reserve, Orissa. Ethnobotany 21 (1&2): pp80-83.
- [14]. Salam, S.; Jamir, N. S. &Singh, P. K.(2011) Ethnomedicinal studies on Tangkhul-Naga tribe in ukhrul district, Manipur.Ethnobotany.23 (1&2): pp129-134
- [15]. Suneetha, J., Reddi, T.T.V.S. and Prasanthi, S.(2009) Traditional phytotherapy for bites in East Godavari district (Andhra Pradesh). Ethnobotany 21 (1&2): pp75-79.
- [16]. Yasodamma, N., Mehar, S.K. and Paramageetham, C.(2009)Threat assessment (IUCN categorization) for ethnomedicinal plants used by Chenchu tribe of Gundlabramheswaram in Nallamalai hills in Andhra Pradesh. Ethnobotany 21 (1&2):pp51-60



PLANTS SPECIES USED BY TRIBES OF MURBAD TAHASIL IN DYING AND
TANNING.

¹Kadlag S.D., ²Gadakh V.D., ³Varpe S.N., ⁴Bharitkar D.V., ⁵Suroshe, V. M.

^{1,2,3,4}, Nutan Arts Commerce & Science College, Rajapur Tal Sangamner, Maharashtra, India.

⁵JSM's Jr. College Shivle, Taluka- Murbad, Dist. Thane, Maharashtra. India.

kadlagsubhash@gmail.com

ABSTRACT

Present work is the outcome of Ethnobotanical exploration of Murbad Tahasil, Dist.Thane. Recording of plant species used by tribes to obtain dyes in Murbad Tahasil was done. Tribal people obtain dyes from plant sources and use them for coloring bamboo crafts/articles, draw pictures on walls, colour horns of cattle, and prepare colored masks.

Key words: Ethno botany, plant species, dying and tanning

INTRODUCTION

Hershberger (1895) coined the term 'Ethno botany' for the study of plant species used by aboriginal people. Ethnic's knowledge of tribes related to plant resources is documented in 'Ethno botany'. Researchers record and try to save the traditional knowledge of tribes. Tribes in Thane district are: viz. Thakur, Warali, Katkari and Koli. The present Ethnobotanical work in Murbad tahasil was undertaken. The plants are keenly associated with the social customs and rituals of tribes.

Location of Murbad Tahasil: It is mountainous and tribal Tahasil of Thane District which lies approximately at 19° 31' N and 73° 35' E (Collectorate of Thane District, 2014). The forests are of tropical mixed deciduous and semi-evergreen types dominated by Madhuca-Terminalia community. The area under forest cover is categorized under reserved, protected and unclassed forests of aggregate area 362.56 sq kms.

The tribal people spend maximum time in the forests and collect different materials viz. flowers, fruits, nuts, bark, shoots, tubers, roots, leafy vegetables, gum, honey and leaves of Gunj and Bel trees. Katkari (Kathodi) is a nomadic tribal group. They are socially as well as economically backward.

REVIEW OF LITERATURE

Tribals of Chhattisgarh obtain dyes from plant sources viz. flowers of *Butea monosperma* (Lamk.) Taub., *Woodfordia fruticosa* (L.) Kruz., fruits of *Mallotus philippensis* Muell.Arg., and whole plants of *Indigofera tinctoria* L. and tannin from *Emblica officinalis* Gaertn., *Cleistanthus collinus* (Roxb.) Benth. & Hk.f., *Acacia catechu* (L.f.) Willd., *Carea arborea* Roxb. and *Terminalia alata* Roxb. (Tirkey et al., 2006).

Patan city of North Gujrat region of Western India is famous for weaving 'Patola' hand woven textiles. People use dye yielding plants such as: *Acacia chundra* (Roxb. ex Rottl.) Wild. (Brown), *Allium cepa* L.(yellow), *Bixa orellana* L. (Orange-Red), *Cosmos bipinnatus* Cav. (Yellow), *Indigofera tinctoria* L. (Indigo-blue), *Rubia cordifolia* L. (Red), *Terminalia chebula* Retz. (Dark blue) are used along with different mordents to obtain various colour shades (Punjani and Goel, 2007).

The Bagh printing and dyeing, a traditional art of Dhar (MP) is well known globally for its brightness and glow. They use dye yielding plant species. *Azadirachta indica* A. Juss., *Curcuma longa* L., *Cinnamomum tamala* T. Nees., *Lawsonia inermis* L., *Tagetes erecta* L. and *Terminalia chebula* Retz. yield yellow dye; while *Woodfordia fruticosa* (L.) Kurz., *Musa paradisiaca* L., *Morinda tinctoria* Roxb., *Anogeissus latifolia* (DC.) Wall. ex Bedd. and *Acacia nilotica* (L.) Willd. ex Bedd. yield red-brown dye. For green colour *Mangifera indica* L. and *Punica grantum* L. are used (Satya, 2012).



METHODOLOGY -Extensive field work was done in the forest area with the help of local tribe people. The information about uses of plants in dyeing and tanning was confirmed from the discussion with the tribal. The ethnobotanical methodology of previous workers was followed (Jain, S. K. and Mugdal, V. 1999; Malhotra et al 2001.). The data of plants was entered in a field notebook

RESULTS AND DISCUSSION

Tribal people obtain dyes from plant sources and use them for coloring bamboo crafts/articles, draw pictures on walls, colour horns of cattle, and prepare colored masks. Enumerations are given below.

ENUMERATIONS

1. *Erinocarpus nimmonii* Grah. Bombay Pl. 21. 1839; Mast. in Hook, f. Fl. Brit, India 1: 394. 1874(as 'nimmoanus'); Cooke, Fl. Pres. Bombay 1:155.1958 (Repr. Ed); Pradhan in Singh et al. Fl. Maharashtra St. Dicot.1:383. 2000. Chera, Chira. Family Tiliaceae.

Trees, 7 m tall; leaves orbicular lobed, base cordate; flowers yellow, mild fragrance; fruits 1-4 celled; seeds one in each cell, oblong.

Fls & Frts : August- October.

Distrib : Common in deciduous, semi evergreen forest. Endemic Western Ghats. Malshej Ghats (NACSA) 107.

Uses : Flowers yield yellow dye and is used to decorate 'Bamboo-crafts'.

Literature : Jain (1991) -(bk) cordage.

2. *Schleichera oleosa* (Lour.) Oken. in Allg. Naturf. 3 (2): 1341. 1841; Hiern. In Hook, f. Fl. Brit, India 1: 681. 1875; Cooke, Fl. Pres. Bombay 1:283.1958 (Repr. Ed); Kulkarni in Singh et al. Fl. Maharashtra St. Dicot.1:577. 2000. Koshimb. Family Sapindaceae

Trees; 5to13m in height; leaves paripinnate, leaflets elliptic-oblong, coriaceous, reddish; flowers greenish- white in panicle cymes, polygamo- dioecious; drupes ovoid, small blunt prickles; seeds 1-2.

Fls & Frts : February- June

Disturb : Occasional on denuded hill slopes. Gorakhgad (NACSA) 282. Siddhagad (NACSA) 099..

Uses : Timber wood. Agricultural tools viz. plough (Dat) , 'Petari' Flowers yield dye.

Literature : Rout, (2007) -(fr) edible. Pawar et al. (2004) -(bk) fish poison. Upadhye and Kumbhojkar (1998) -(bk) dye.

3. *Butea monosperma* (Lam.) Taub in Eng. & Prantl, Pfam. 3(3): 365. 1894.; Baker in Hook, f. Fl. Brit, India 2: 194. 1876; Cooke, Fl. Pres. Bombay 1:395.1958 (Repr. Ed); Kothari in Singh et al. Fl. Maharashtra St. Dicot.1:610. 2000. Palas. Family Fabaceae.

Tree; bark- ash coloured, fissured; leaves trifoliolate, leaflets ovate- oblong or rhomboid; flowers scarlet red, in compact racemes; pods stalked, one- seeded, silvery tomentose.

Fls & Frts : January- June.

Distrib : Common in dry deciduous forest. Veherewadi (NACSA), 256.

Uses : Flowers yield natural dye. preparation- dry powder of flowers boiled in water and lime is added. Used for coloring Bamboo- crafts

Literature : Khanna and Kumar (2000) -(fl) urinary blockages. Patel, et al., (2003) -(lf) hut. Ishtiaq et al. (2013) - (wd) timber, fuel.

4. *Butea superba* Roxb. ex Willd. Var. Sp. Pl. 3: 917. 1802; Baker in Hook, f. Fl. Brit, India 2: 195. 1876; Cooke, Fl. Pres. Bombay 1: 396. 1958 (Repr. Ed); Kothari in Singh et al. Fl. Maharashtra St. Dicot. 1: 611. 2000. Palashi. Family Fabaceae.

Liana, leaves trifoliolate, leaflets, ovate-rhomboid or elliptic-oblong; flowers bright-orange or scarlet in terminal and axillary racemes; pods brown, hairy, oblong, narrowed at base.

Fls & Frts : January- June.

Distrib : Common in deciduous forest. Sonawale (NACSA), 167.

Uses : Flowers- Natural dye preparation- dry powder of flowers boiled in water and lime is added. Used for coloring Bamboo- crafts- 'Toplis'

Literature : Jain (1991) -(fl) dysuria.

5. Acacia catechu (L.f.) Wild.(= *A. catechuoides*) Sp. Pl. 4: 1079. 1806; Baker in Hook. Fl. Brit. Ind. 2: 295. 1878; Cooke Fl. Pres. Bombay 1: 476. 1958 (Repr. Ed.); Londhe in Singh et al. Fl. Maharashtra St. Dicot. 1: 808. 2000. Khair. Family Mimosaceae.

Tree; 10-12 m in height; 30 to 50 pairs of leaflets; flowers in axillary spikes, Calyx, petals and rachis pubescent; ; stalked, brown, shining pods, Seeds 3-10.

Fls. & Frts. : June-October.

Distrib. : Common in deciduous forest. Zapwadi (NACSA), 268.

Uses : wood pieces are boiled in water and filtrate settle as 'Kattha' (black dye)

6. Haldina cordifolia (Roxb.) Ridsd. in Blumea 24: 361. 1978; Kothari & Moorthy, Fl. of Raigad Dist. 182, 1993; Almeida, Fl. Sawantwadi, 205, 1990; Cooke, Fl. Pres. Bombay 1: 626, 1903. Mudaliar & Prasad in Singh et al. Fl. Maharashtra St. Dicot. 2: 127. 2001 Hedru, Haldu, Family Rubiaceae.

Trees; leaves crowded at ends of branchlets, orbicular, shortly acuminate, cordate at base, lower surface densely pubescent; flowers in peduncle heads, globose, yellow, capsules 4-5mm, seeds six in each cell.

Fls & Frts : May- August.

Distrib : deciduous forest. Mhadas (NACSA), 227.

Uses : Bark yields yellow colour; Timber wood; Agri. Tools: Plough.

Literature : Sharma and Singh, (1999) -(bk) stomachache. Jain, (1991) -(lf) headache, (wd) tools, (bk) yellow dye.

7. Morinda pubescens J. E. Sm in Rees, cyclop. 24, n. 3. 1813; Hook, f. Fl. Brit, India 3: 156. 1880; Cooke, Fl. Pres. Bombay 2: 43. 1958 (Repr. Ed); Mudaliyar and Prasad in Singh et al. Fl. Maharashtra St. Dicot. 2: 146. 2001. Bartondi, Asu. Family Rubiaceae.

Medium sized trees; leaves obovate, tomentose, elliptic-oblong; flowers white in globose heads; fruits irregularly globose, fleshy.

Fls & Frts : March- October.

Distrib : Common in dry deciduous forest. Sonawale (NACSA), 166.

Uses : Bark yielded dye. Timber wood.

Literature : Jain, (1991) -(rt) dye, (wd) timber.

8. Mallotus philippensis (Lam.) Muell.-Arg. in Linnaea 34: 196. 1865 (as *Philippensis*); Hook. f. Fl. Brit. India 5: 442. 1887; Cooke, Fl. Pres. Bombay 3: 113. 1958 (Repr.); Londhe in Singh et al. Fl. Maharashtra st. Dicot. 2: 894. 2001. Shendar. Family Euphorbiaceae.

Trees; many branches; Leaves ovate or ovate lanceolate; Flowers greenish-yellow; Capsules, 3-lobed covered with red powder; Seeds black.

Fls & Frts : November-February.

Distrib : Common on hill slopes. Malshej Ghats (NACSA), 104.

Distrib : Fruits yield red dye.

Literature : Jain, (1991) -(fr) dye, anthelmintic.

9. Emblica officinalis Gaertn. Fruct. 2: 122. 1791; Hook, f. Fl. Brit, India 5: 289. 1887; Cooke, Fl. Pres. Bombay 3: 81. 1958 (Repr. Ed); Londhe in Singh et al. Fl. Maharashtra St. Dicot. 2: 873. 2001. Awala. Awalkanthi. Family Euphorbiaceae.

Deciduous trees; leaves bipinnate, leaflets linear, oblong, glabrous; flowers minute, greenish-yellow, numerous; fruits greenish-yellow, globose, smooth.

Fls & Frts : February- October.

Distrib : Common, wild as well as cultivated. Walhivare (NACSA), 053.

Uses : Fruits are dried, powdered and is used in preparation of hair dyes. .

Literature : Jain (1991) -(sd) asthma, bronchitis. Singh and Chauhan (2004) - (wp) religious; Sharma and Singh (2001) - (fr) cough.



Sanjay
Principal
Nutan Arts College, Rajapur
Tal. Sangmaner Dist. A. Nagar

10. Acacia chundra (Roxb. ex Rottl.) Willd. Sp. Pl. 4: 1078. 1806; Londhe in Singh et al. Fl. Maharashtra St. Dicot. 1: 808. 2000. Yadav and Sardesai, Fl. Kolhapur Dist. 178. 2002. Khair Lal. Family Mimosaceae.

Tree; moderate 3 to 5 m tall; 20 to 40 pairs of leaflets; flowers in axillary spikes, Calyx, petals and rachis pubescent; Pods brown, shining.

Fls. & Frts. : August-February.
Distrib : Common in deciduous forest. Khandape (NACS), 201.
Uses : Kattha (brown black dye) is prepared from wood.
Literature : Punjani and Goel, (2000) -(wd) dye.

11. Acacia nilotica (L.) Willd. Ex Del. Baker in Hook, f. Fl. Brit, India 2: 293. 1878; Cooke, Fl. Pres. Bombay 1: 472. 1958 (Repr. Ed); Londhe in Singh et al. Fl. Maharashtra St. Dicot. 1: 813. 2000; Babhul. Family Mimosaceae

Tree; tall; bark fissured, blackish-brown; leaves pinnate, leaflets 10-20 pairs; flowers in axillary, pedunculate heads, yellowish; pods stalked, linear-oblong; seeds blackish-brown, polished.

Fls. & Frts : May- February
Distrib : Uncommon on the bunds of fields. Khandape (NACS), 205.
Uses : Bark is used in dyeing and tanning.
Literature : Khyade et al. (2010) -(tw) toothache.

12. Anogeissus latifolia (Roxb. ex Dc.) Guill. & Perr. Fl. Seneg. Teent. 1: 280. 1832; in Hook, f. Fl. Brit, India 2: 450. 1878; Cooke, Fl. Pres. Bombay 1: 512. 1958 (Repr. ed.) Santapau, Fl. Khandala ed. 3. 91. 1967; Diwakar in Singh et al. Fl. Maharashtra St. Dicot. 2: 1. 2001; Dhawada. Family Combretaceae.

Deciduous tree; leaves opposite or sub opposite, elliptic-oblong; flowers sessile in dense heads; fruits clustered, with persistent calyx, wings entire, beaked; seeds ovoid solitary.

Fls & Frts : September- March.
Distrib : Common in dry deciduous forest. Mal (NACSA), 242.
Uses : leaves yield brown dye.
Literature : Satya, (2012) -(lf) dye. Sonawane et al., (2012) -(st) timber, gum.

13. Terminalia chebula Retz. Obs. Bot. 5: 31. 1788; Cl. in Hook, f. Fl. Brit, India 2: 446. 1878; Cooke, Fl. Pres. Bombay 1: 509. 1958 (Repr. ed.); Diwakar in Singh et al. Fl. Maharashtra St. Dicot. 2: 4. 2001. Hirda. Family Combretaceae.

Tree; leaves elliptic oblong, base rounded, apex obtuse; petioles with 2 glands near the tip; flowers white-pale yellow; drupes pendulous, ellipsoid, yellowish-green, faintly ribbed; stone oblong.

Fls. & Frts. : March- November.
Distrib : Uncommon on hill slopes in forests. Siddhagad (NACSA), 094.
Uses : Fruits yielded yellow dye.
Literature : Satya, (2012) -(fr) cold & cough; Jain, (1991) -(fr) dye.

14. Woodfordia fruticosa (Linn.) Kurz. in J. Asiat. Soc. Beng. 40 (2): 56, 1871; Diwakar in Singh et al. Fl. Maharashtra St. Dicot. 2: 39. 2001; Santapau, Fl. Khandala ed. 3, 313, 1967; Almeida, Fl. Sawantwadi 182, 1990. Dhayti, Dhauri. Family Lythraceae.

Shrub; leaves oblong lanceolate, glabrous, glandular punctate beneath; flowers deep red or scarlet in axillary or extra axillary fascicled cymes; capsules oblong, brown.

Fls & Frts : January- May.
Distrib : Common on slopes and along roadsides. Mhadas (NACSA), 233.
Uses : Red dye is obtained from flowers.
Literature : Sharma and Singh (2000) -(rt) snakebite. Satya, (2012) (fl) dye;

15. Curcuma longa L. Sp. Pl. 2. 1753, pro. max. parte.; Baker in Hook, f. Fl. Brit, India 6: 214. 1890; Cooke, Fl. Pres. Bombay 3: 328. 1958 (Repr. Ed); Yadav and Sardesai, Fl. Kolhapur Dist. 476. 2002. Halad. Family Zingiberaceae.



Herbs; rootstock ovoid; sessile cylindrical tubers, tubers orange inside; leaves oblong-lanceolate; flowers white.

Fls & Frts : Not seen

Distrib : Cultivated in backyards. Kheware (NACSA), 024

Uses : Rhizomes yield natural yellow dye.

Literature : Satya, (2012) -(rh) dye. Sharma and Singh, (2001) -(rh) antiseptic.

16. Oroxyllum indicum (L.) Vent. Dec. Gen. Nov. 8. 1808; Cl. In Hook, f. Fl. Brit, India 4:378. 1884; Cooke, Fl. Pres. Bombay 2:401.1958 (Repr. Ed); Londhe in Singh et al. Fl. Maharashtra St. Dicot.2:575. 2001. Tetar.

Trees; leaves opposite pinnate, leaflets elliptic-oblong, acuminate; flowers yellowish purple; capsules flattened, huge, bent; woody; seeds many, winged. Family Bignoniaceae

Fls & Frts : May- December

Distrib : Common in deciduous forest. Kheware (NACSA), 135.

Uses : Bark, flowers and fruits are used for tanning and dyeing.

Literature : Jain (1991) - (fr) vegetable, (bk, Fr) dye.

Present work is the result of intensive, systematic, Ethnobotanical exploration of Murbad Tahasil, Dist. Thane. Genera and species of medicinal plants used by tribes of Murbad Tahasil in treatment of human ailments are recorded. Total 16 plants were recorded belonging to 10 families.

ACKNOWLEDGEMENT

I express my sincere sense of gratitude to my research guide Dr. Gaykar B. M. and Co-guide Dr. Khose R.G. former Head of the Botany Department for their keen interest in the subject, scholarly inspiration, efficient guidance, constant encouragement and pertinent criticism during the course of present investigations, which always kept my research work in progress and Hon. Management of Pragatik Shikshan Sanstha Rajapur, Tal. Sangamner Dist. Ahmednagar.

REFERENCES

- [1]. Almeida, M.R. (1998) Flora of Maharashtra. Orient Press, Mumbai (India) vol. I to V.
- [2]. Collectorate of Thane District (2014) Administrative setup, Thane at Glance. www.Thane.nic.in
- [3]. Hershberger, J.W. (1895) Some new ideas. Philadelphia Evening Telegraph. In Jain, S.K. & Mudgal, V. (1999) A handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. 5.
- [4]. Ishtiaq, M., Maqbool, M., Hussain, T. & Shah, A. (2013) Role of Indigenous Knowledge in Biodiversity Conservation of an area: A Case Study on Tree Ethnobotany of Soona Valley, District Bhimber Azad Kashmir, Pakistan. Pak. J. Bot. <http://pakbs.org> 45:157-164
- [5]. Jain, S.K. & Mudgal, V. (1999) A handbook of Ethnobotany. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. 5.
- [6]. Khanna, K.K. and Kumar Ramesh (2000) Ethnomedicinal plants used by the Gujjar tribe of Saharanpur district, Uttar Pradesh. Ethnobotany 12:17-22.
- [7]. Khyade, M.S., Awasarkar, U.D., Deshmukh, R.R. and Petkar, A.S. (2010) Ethnobotanical Reports about Few Important Diseases from Akole Tehasil of Ahmednagar District (MS) India. Asian. J. Exp. Biol. Sci. Society of Applied Sciences. ISSN 0975-5845. <http://www.ajcbs.com> 12393-403.
- [8]. Malhotra, K.C., Gokhale, V., Chatterjee, S. and Shrivastav, S. (2001) Cultural and Ecological Dimensions of Sacred groves in India. Indian National Science Academy, New Delhi and Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal. 1- 30.
- [9]. Patel, H.R. and Patel, R.S. (2013) Ethnobotanical Plants Used by the Tribes of R.D.F. Poshina Forest Range of Sabarkantha District, North Gujarat, India. International Journal of Scientific and Research Publications. ISSN 2250-3153 <http://www.ijsrp.org> 321 to 8.



- [10]. Patel, V.G. and Jangid, M.S.(2013)Ethnobotanical studies of selected plants of Mimosaceae family of Idar-Vadali forest ranges, district Sabarkantha, Gujarat. Life Sciences Leaflets. ISSN 2277-4297 (print) 0976-1098. <http://www.greenpharmacy.info/text.asp/4:51-59>
- [11]. Pawar, S. & Patil, D.A. (2004) Herbal folk remedies for urinogenital complaints in Jalgaon district of Maharashtra.Ethnobotany.16 (1&2):pp86-90.
- [12]. Sonawane, V.B., Saler, R.S., Sonawane, M.D. & Kadam, V.B.(2012)Ethnobotanical Studies of Mokhada, District Thane. International journal of Life Science and Farma research. ISSN 2250-0480. <http://www.ijlpr.com>
- [13]. Tirkey, A., Kumar, V., Sikarwar, R.L.S. & Jain, S.K.(2006)Ethnobotanical research in Chhattisgarh - A concepts.Ethnobotany.18 (1&2): pp67-76.
- [14]. Upadhyay, A.S. & Kumbhojkar, M.S.(1998)Schleichera oleosa (Lour.) Oken. Tree; A boon for Tribals. Ethnobotany101&238-41.
- [15]. Yadav, S.R. and Sardesai,M.M.(2002) Flora of Kolhapur district, published by Shivaji University,Kolhapur.
- [16]. Punjani, B.L. & Goel, A.K. (2007)Natural dye-yielding plants used in indigenous art of preparation of Patola in Patan city, Gujrat, India.Ethnobotany.19(1&2):pp32-40.
- [17]. Jain, S.K.(1991)Dictionary of Indian Folk Medicine and Ethnobotany. Deep Publications, New Delhi.
- [18]. Rout, S.D.(2007)Ethnobotany of diversified wild edible fruit plants in Similipal Biospere Reserve, Orissa.Ethnobotany19(1&2):pp137-139.
- [19]. Satya, V.(2012)Dye yielding plants used in traditional art of Bagh printing. Ethnobotany 24 (1&2) :pp101-107.
- [20]. Pawar, S. & Patil, D.A. (2004)Herbal folk remedies for urinogenital complaints in Jalgaon district of Maharashtra.Ethnobotany.16(1&2)pp86-90.
- [21]. Pawar, S., Patil, M.V. & Patil, D.A.(2004)Fish Stupefying plants used by tribals of North Maharashtra.Ethnobotany.16(1&2)pp136-138.
- [22]. Khanna ,K.K.and Kumar Ramesh(2000)Ethnomedicinal plants used by the Gujjar tribe of Saharanpur district, Uttar Pradesh.Ethnobotany.12:pp17-22
- [23]. Ishtiaq, M., Maqbool, M., Hussain, T. & Shah, A.(2013)Role of Indigenous Knowledge in Biodiversity Conservation of an area: A Case Study on Tree Ethnobotany of Soona Valley, District Bhimber Azad Kashmir, Pakistan.Pak. J. Bot.<http://pakbs.org> 45.
- [24]. Sharma, P.P. & Singh,N.P.(1999)Less-known ethnobotanical uses of plants in Dadra & Nagar Haveli. Ethnobotany.11(1&2):pp109-114
- [25]. Sharma, P.P. & Singh,N.P.(2001)Ethnomedicinal uses of some edible plants in Dadra, Nagar Haveli and Daman (U.T.)Ethnobotany.13(1&2):pp121-125
- [26]. Sharma, P.P. and Singh,N.P.(2000)Less-known ethnomedicinal uses of plants in Dadra and Nagar Haveli (U.T.): Part II (L-Z).Ethnobotany.12:81-85
- [27]. Singh, N. & Chauhan, S.V.S.(2004)Studies on some leaves (Patra) used for worship in Brij Mandal.Ethnobotany.16(1&2)pp69-71.

