

POLLEN DIVERSITY OF SOME ETHNO MEDICINAL PLANTS OF JANJGIR- CHAMPADISTRICT, CHHATTISGARH, INDIA.

**Corresponding Author: Mr. Kantikeshwar Jaiswal
Assistant Professor & Head of Department- Botany,
Pt. Jawahar Lal Nehru College, Nawagarh (C.G).**

ABSTRACT

In the pollen diversity, the term melissopalynology has been able to manage all the pollen grain which is extracted from the honey. So for the continuation part of the herbal treatment, all the ethno medicinal plants need to be upgraded. So for the sake of the herbal treatment of Chhattisgarh, the growth of ethno medical plants needs need to be improved. So for the part of improvement Pollen's diversity plays a vital role. To, make the role of pollen diversity more effective the characteristic of required things need to be more analyzing in the part for performances and the range of pH level all the things should be monitored properly while the outcome will be executed properly. Evaluating the essentiality of pollen diversity has played a vital role in herbal treatment

Key word: Herbal treatment, Pollen diversity, Melissopalynology, Chhattisgarh, Ethno medical plants,

1.0 Introduction

The term pollen diversity has been linked up with pollen and the part of vegetable diversity which is known to be finished due to the several taxonomic resolutions possible and variation in pollen production between various kinds of plants with the part of accuracy with the capturing part of the pollen sum. In recent decades, technology has improved a lot. Not only in the modern era, from the previous era plants, are used to produce the medicine which would be good for people's health. So, before producing any kind of medicine the main benefit is the identification of trees. With the help of proper identification of plants, proper medicine will be produced. In the part of the pollen diversity, the main character is pollen which plays a significant role. This part of the grain is called palynology. In this part, the ethno medical plants are used for the skin disease part. The World health organization has already claimed that in human health basic medicine is required which is extracted from plants. In terms of herbal skin treatment, this part plays an important role.

In addition to that, to maintain the growth factor of the herbal treatment pollen diversity is one of the most effective parts. With the help of pollen diversity, the fertilization of all required plants will be more upgraded. Moreover in the state of the Chhattisgarh people have believed in herbal treatment so, to maintain the belief of herbal treatment, pollen diversity is going to be the most effective part in a true sense.

2.0 Discussion

The term pollen diversity is the method that is also going to help out to extend the production of the plants such as ethno medicinal plants. This particular plant is one of the most required things in herbal treatment for skin diseases [1]. In the preliminary stage for the skin treatment, the herbal part is one of the most important things which is going to help to get rid of the skin problem [2]. Depending on the research it has been proved that 65% of Indians are entirely dependent on the traditional treatment for the medicine. Especially in the area of skin issues, they are entirely dependent on traditional treatment. So, for the sake of their choices, these kinds of plants are required for the continuation of the process of producing part of the plant. In Chhattisgarh, a huge number of tribal communities are there who all are dependent on herbal treatment. So, for their reference, on the medical side, the ethno medical plants also need to extend their plantation to make the herbal medicine treatment more effective.

2.1 Material and process

The Chhattisgarh has been declared a herbal state because all the natural sources belong to this state's plant. The government of Chhattisgarh has already declared their state as a conserve of medicinal plants, plantation of medicinal plants and also tries to enhance the production of those kinds of plants [6]. When more plants will be grow then it will be more fruitful for the part of herbal treatment as well. Among those plants, some of the plant names are as follows.

S.No.	Local Name	Botanical Name	Family	Shape of Pollen grain
1	Pila Dhatua	Argemone maxicana	Papaveraceae	Oblate-spheroidal
2	Chokora	Cassia tora	Fabaceae	Prolate
3	Semal	Bombax ceiba	Malvaceae	Oblate-spheroidal
4	Harra	Terminalia chebula	Combretaceae	Prolate -spheroidal
5	Baheda	Terminalia bellirica	Combretaceae	Prolate -spheroidal
6	Kahua	Terminalia arjuna	Combretaceae	Prolate -spheroidal
7	Nirgundi	Vitex negundo	Lamiaceae	Prolate
8	Dudhi	Euphorbia hirta	Euphorbiaceae	Oblate-spheroidal
9	Shisham	Delbergia sisso	Fabaceae	Sub-oblate
10	Punarnava	Boerhavia diffusa	Nyctaginaceae	Oblate-spheroidal

To extend all the ethno medicinal plants' pollen diversity is one of the required parts. In the stage of the pollen diversity, the sample of the pollen needs to be collect which is going to be helpful in the future for those plants for their extension. As mentioned, those plants are one of the most required parts for the area of traditional herbal treatment. For the matter of extending those parts, the sample of the pollen needs to be collected and after the collection, it is going to be driven into the alcohol which is occupied with the 70%.

To extend this process the most important part is to save the flower honey and those honey need to be under the proper process. [4]. so to maintain the process of herbal treatment the ethno medicinal plants maintaining is one of the most important parts. That is for the continuation of those processes the honey of those kinds of plants is needed to be collected wisely. So, to maintain that collection of the process, various kinds of stages are there. In that particular stage, the color will be easily visualized. In this particular process, the pH level is one of the most important things which

is measured by the digital pH meter. In this stage of the testing, the honey will be applied with hydrochloric acid, and take a minute to visualize the color. The formula of the honey will be containing more than 45% polar grain which is called unifloral honey.

So, considering all the parts it is going to be stated that, those methods of the honey of the flower will be collected [8]. After collecting all the required plants, honey will help to enhance the more trees which are going to be more fruitful for the history of medicine. In the future of herbal treatment, this part of honey plays an important role, and as mentioned that in Chhattisgarh most people are depending on the traditional treatment.

2.2 Testing and reaction

In the part of testing many more testing parts are included which is responsible is to make the flower's honey more effective. Through those stages of testing the honey of the flower will be examined through various kinds of processes. Among those processes, physicochemical tests are one of the integral requirements which are used in the biocides, chemicals, the production part of animal health, and others [9]. In the testing part, all the required properties are attached with the various kinds of interaction part which is also going to define various kinds of chemical reactivity [11]. The physicochemical testing part is a compound with various kinds of essential parts which also interact with various kinds of protein factors. In the testing, part is compressed with the content of moisturizer and Ash which plays an essential role in the pollen diversity. In the stage of the pollen diversity, the particular sample will be dried out at the temperature of 105 degrees along with that part the moisturizer is also able to cover up the cooled which is going to be reweighed [13]. With the help of this testing part, the honey of the flower will be excluded and with the help of the standard solution it will also help out to produce some honey which is going to be more fruitful for the future.

3.0 Observation

After doing the testing, part of the honey in the pollen diversity will be collected from the month of January till to summer season. This season is responsible for extending the pollen diversity of those ethno medicinal plants. In the area of Chhattisgarh in various seasons this honey will be collected from various kinds of places. During the summer season, the sample of the honey was collected

from Chhattisgarh [14]. While the honey was going to be collected from that particular season then it belongs to the various kinds of 16 families. In that particular family, six numbers of plants are considered to represent the family of ethno medicinal plants. On the other hand, in the season of winter, all those plants which are collected represent various kinds of trees that are identified as the spice part.

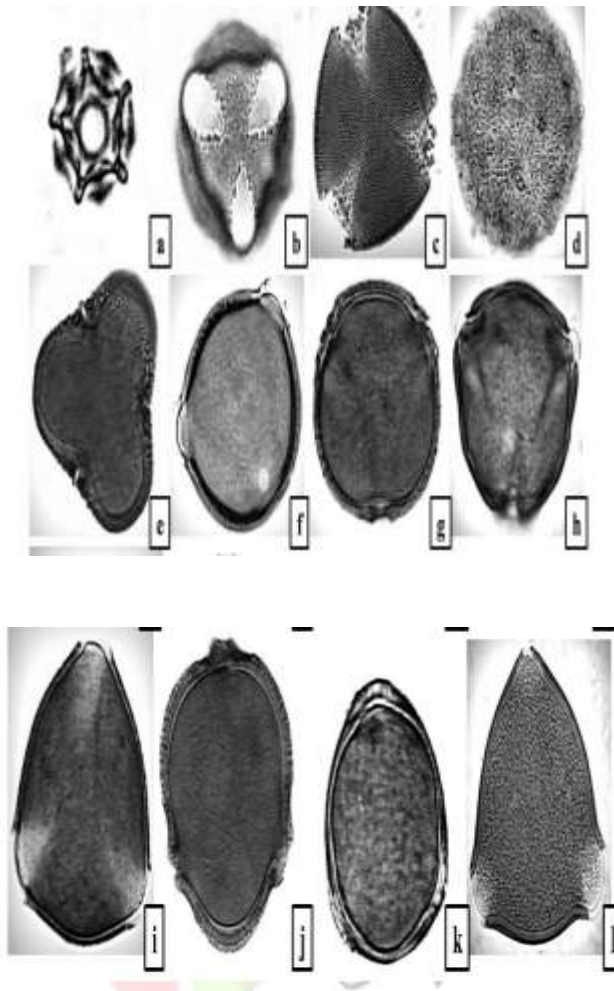


Figure 1: Morphological features of pollen grains

(Source: shivangee Singh, 2018)

The pollen grains are able to produce another flower. The cell of the dollar is able to originate with some kind of sporogenous tissue which is called pollen grains. In the morphological feature, the pollen grain is able to generate one cell into another which in the future is going to easily generate other flowers [21]. While the flowers will be generated in the herbal treatment will be easily expanded. This feature will be helping out to change the outwards area depending on the environment [24]. The plant's morphological feature is able to zeppelin the characteristic of the plant-like leaf area, the density of nodded, and some kind of response factors like availability of light, the compaction of soil, and some kind of organic matter. To maintain all the required areamores perfectly this feature plays a vital role.

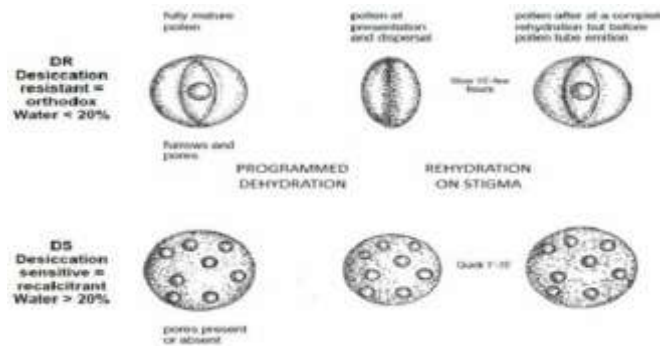


Figure 2: Variation of pollen's size.

(Source: <https://www.researchgate.net/profile/Ettore.png>)

The pollen grain has various kinds of sizes. Morphologically pollen grain has divided into triangular, very rarely prolate, reticulate, peoletspheroidal.

As it is mentioned that many people are there who truly believe in herbal medical treatment. That is why the state of Chhattisgarh has preferred those ethno medicinal plants and their habits. For the sake of those trees, many people are there who are truly benefited from those trees. In the medical part for conjunctivitis Argemone mexicana is used. To reduce headaches the herbal tree of plumbago zeylanica is used. If by chance people have faced snake bites then with the help of that tree are able to mitigate all the problems. Many people are there who have been faced with the issue of dengue or fever, then by the help of papaya tree leaves people can easily get rid of their problem [26]. All those herbal trees are used as a kind of home remedy and try to make all the people more satisfied. It is also observable that people are easily satisfied with all those trees. That is why the belief in herbal trees of all the tribes is enhancing too much. The power of trees is an entire miracle for them; this is why the people who all form the state of Chhattisgarh have a huge belief in them [18]. As it is mentioned that people have believed in those herbal trees this is why the cultivation of those herbal trees also needs to be enhanced. So for the up-gradation part of that tree pollen diversity plays a vital role.

Local Name	Genus	Habit	Medical use
Pila Dhatua	Argemone Maxicana	Herb	Applied on conjunctive
Chokora	Cassia tora	Herb	Root used in snake bite
Gatran	Casealpinia bonducella	Herb	Leaf use in Asthma.

Figure 3: Name of Ethno medical tree

(Source: Ashwini Kumar Dixit2018)

The names of the ethno medicinal trees are Amaranthus viridis L., Antigonon leptopus, Bombax ceiba L., Callistemon citrinus skeels,, Cyperus Sp, Justicia sp, Moringa Oleifera Lam, Coccinia grandis L. Voigt, Oxalis Corniculata, Cicer arietinum, Solanum xanthocarpum schrad& wendl, Vitex negundo L, Justica Sp, Moringa Oleifera, Capsicum annum L., Psidium guajava L., Helicteris isora L. Ham.,Argemone Mexixicana, Carica Papaya and others.

4.0 Results

The term pollen diversity is robust and is able to capture all the structures of the diversity. That part is truly required in the part of the comparison.

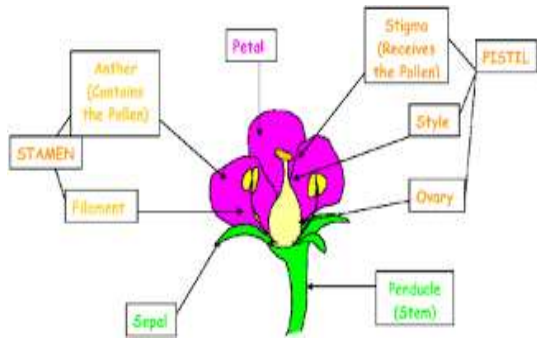


Figure4: Result of pollen in reproduction

(Source: data: image/png; base64, iVBOR.jpg)

It has already been discussed that in the state of Chhattisgarh many people are there who all believe in herbal treatment. So to maintain the herbal treatment in the perfect way, pollen is one of the most vital parts of reproduction. Without reproduction, it is not possible to maintain the herbal treatment. Because herbal treatment is attached to the tree, so the reproduction part of the tree is not going to happen then the treatment will be stopped. So, for the continuation part of the treatment, pollen diversity is one of the most important things for reproduction. For the part of reproduction, pollen is able to deliver some kind of male gametes and that gamete will fertilize an egg [30]. In this process, pollen is able to develop seeds and from that particular seeds, many more plants will be grown. Hence, it has been proved that to maintain the herbal treatment is effective form pollen diversity has played an effective role throughout the process.

5.0 Recommendation

In the stage of the recommendation, it is going to state that, to maintain the herbal treatment the most important part is to maintain all the ethno medicinal plants. In terms of maintaining the most important part of the pollen diversity [28]. All the ethno medicinal plants need to be accomplished with the effective part of cultivating with the long-term procedure. Keep on going with the long-term procedure all the required plants have been propagated in a perfect way. So to upgrade the

propagation of plants, pollen diversity plays an important role [3]. In the future to make the propagation pathway more effective pollen diversity is needed to be more impactful. So, to maintain the herbal treatment, more effective pollen diversity needs to be more updated in terms of everything.

6.0 Conclusion

In the stage of the conclusion, it is going to be stated that pollen diversity is able to influence all the indicators of diversity and is able to decrease all the transport part of the diversity. This term has various kinds of respect in the respect of the plant's propagation. With the help of the plant's propagation, the treatment part of the herb is also maintained in a proper way. So to make the ecological theory more effective pollen diversity plays an essential role in herbal treatment.

The diversity is measured up with the rarefaction which is also going to indicate various kinds of aspects of the landscape. In addition to that, Pollen diversity is bale to enrich the seeds of the plants, and following all the theory of the ecology, it can be obtained with ratio part of the diversity along with the richness. So, concluding that herbal treatment is one of the most effective in the medical part so to maintain their effective part and the ethnic medial tree are need to upgrade. So for the sake of human health pollen diversity is one of the most important parts while the growth is included. So, going through all the explanations it can be stated that, pollen diversity is one of the most vital parts of the growing part of the ethno medical plants.

Reference list Journal

- [1] Raghuvanshi, D., Dhalaria, R., Sharma, A., Kumar, D., Kumar, H., Valis, M., Kuča, K., Verma, R. and Puri, S., 2021. Ethnomedicinal plants traditionally used for the treatment of jaundice (Icterus) in himachal pradesh in western Himalaya—A review. *Plants*, 10(2), p.232.
- [2] Kumar, M., Rawat, S., Nagar, B., Kumar, A., Pala, N.A., Bhat, J.A., Bussmann, R.W., Cabral-Pinto, M. and Kunwar, R., 2021. Implementation of the use of ethnomedicinal plants for curing diseases in the Indian Himalayas and its role in sustainability of livelihoods and socioeconomic development. *International journal of environmental research and public health*, 18(4), p.1509.
- [3] Alduhisa, G.U. and Demayo, C.G., 2019. Ethnomedicinal plants used by the Subanen tribe in two villages in Ozamis City, Mindanao, Philippines. *Pharmacophore*, 10(4), pp.28-42.
- [4] Dapar, M.L.G., Meve, U., Liede-Schumann, S. and Alejandro, G.J.D., 2020. Ethnomedicinal plants used for the treatment of cuts and wounds by the Agusan Manobo of Sibagat, Agusan del Sur, Philippines. *Ethnobotany Research and Applications*, 19, pp.1-18.
- [5] Nankaya, J., Nampushi, J., Petenya, S. and Balslev, H., 2020. Ethnomedicinal plants of the Loita Maasai of Kenya. *Environment, Development and Sustainability*, 22(3), pp.2569-2589.
- [6] Taek, M.M., EW, B.P. and Agil, M., 2018. Ethnomedicinal plants used for the treatment of malaria in Malaka, West Timor. *Journal of Young Pharmacists*, 10(2), p.187.
- [7] Dhiman, N., Shivani, Y.S.T. and Kumar, S., 2019. Diversity of ethnomedicinal plants in Churdhar Wildlife sanctuary of district Sirmour of Himachal Pradesh, India. *J. Appl. Pharm. Sci*, 9, pp.48-53.
- [8] Chander, H. and Sharma, G., 2020. Some rare ethnomedicinal plants of lower foot hills of North-Western Himalaya in Himachal Pradesh. *Ethnobotany and Conservation*. Pant S., Sharma A. and Sharma V.(eds.). Indu Book Service Private Limited, New Delhi, 123, p.143.
- [9] Jishtu, V., Bhondge, S.W., Bhushan, B., Chauhan, M. and Chauhan, A., 2021. Threatened ethnomedicinal plants of Dodra-Kwar region of Himachal Pradesh, NW Himalaya. *Journal of Medicinal Plants*, 9(2), pp.151-159.
- [10] Silalahi, M., Khairiah, A. and NISYAWATI, N., 2020. Ethnomedicinal plants and practices related to pregnancy, childbirth, and postpartum healthcare of Minangkabau ethnic group, West

Sumatra, Indonesia. *Biodiversitas Journal of Biological Diversity*, 21(10).

[11] Balberona, A.N., Noveno, J.J., Angeles, M.G.B., Santos, R.I., Cachin, E.J.D.J. and Cruz, K.G.J., 2018. Ethnomedicinal plants utilized by the ilongot-egongot community of Bayanihan, Maria Aurora, Aurora, Philippines. *International Journal of Agricultural Technology*, 14(2), pp.145-159.

[12] Jain, D., Uniyal, N., Mitra, D. and Janmeda, P., 2020. Traditional resources and use of aromatic and ethnomedicinal plants in Uttarakhand: compliment of nature. *International Journal of Herbal Medicine*, 8(5), pp.88-95.

[13] Hussain, T., Bajpai, S., Saeed, M., Moin, A., Alafnan, A., Khan, M., Kamal, M.A., Ganash, M. and Ashraf, G.M., 2018. Potentiating effect of ethnomedicinal plants against proliferation on different cancer cell lines. *Current drug metabolism*, 19(7), pp.584-595.

[14] Uddin, M.Z., Rifat, A.B., Mitu, F.Y. and Haque, T., 2019. Ethnomedicinal plants for prevention of cardiovascular diseases in Bangladesh. *Bangladesh Journal of Plant Taxonomy*, 26(1), pp.83-95.

[15] Khojimatov, O.K., Khamraeva, D.T., Khujanov, A.N. and Bussmann, R.W., 2020. An overview of Ethnomedicinal plants of Uzbekistan. *Ethnobotany Research & Applications*, 20(08), pp.1-19.

[16] Baidya, S., Thakur, B. and Devi, A., 2020. Ethnomedicinal plants of the sacred groves and their uses by Karbi tribe in Karbi Anglong district of Assam, Northeast India.

[17] Sen, T.D. and Thakur, T., 2021. Some Ethnomedicinal Plants of Western Himalayas Useful in Making Local Alcoholic Drinks. *Journal of Scientific Research in Medical and Biological Sciences*, 2(3), pp.75-103.

[18] Mandal, A., Saha, P., Begum, A., Saha, A., Chakraborty, B., Dutta, S. and Roy, K.K., 2020. Ethnomedicinal plants used by the ethnic people living in fringe villages of Rasikbil of Cooch Behar district, West Bengal, India. *Indian J. Sci. Technol*, 13(16), pp.1676-1685.

[19] Subba, A.R. and Rai, S.K., 2018. Phytochemical screening, physico-chemical analysis and antioxidant activity of some ethnomedicinal plants from Sikkim Himalaya.

[20] Mohapatra, S.S., Sarma, J., Roy, R.K., Panigrahi, S. and Ganguly, S., 2018. Ethnomedicinal

plants used in balasore district of Odisha: a comprehensive report. *Int. J. Curr. Microbiol. App. Sci*, 7(1), pp.1959-1963.

[21] Kumar, N. and Ashaq, M., 2021. Study of ethnomedicinal plants of Tehsil Akhnoor, Jammu and Kashmir. *International Journal of Research and Analytical Reviews*, 8, pp.67-78.

[22] Rubio, M.M. and Naïve, M.A.K., 2018. Ethnomedicinal plants used by traditional healers in North Cotabato, Mindanao, Philippines. *J Biodivers Environ Sci*, 13(6), pp.74-82.

[23] Lange-Jacobs, D., Shaikh-Kader, A., Thomas, B. and Nyakudya, T.T., 2020. An Overview of the Potential Use of Ethno-Medicinal Plants Targeting the Renin–Angiotensin System in the Treatment of Hypertension. *Molecules*, 25(9), p.2114.

[24] Biswakarma, S., Pala, N.A., Shukla, G. and Chakravarty, S., 2018. Ethnomedicinal plants used to cure stomach disorders in forest fringe communities in northern part of West Bengal. *Indian Journal of Natural Products and Resources (IJNPR)[Formerly Natural Product Radiance (NPR)]*, 8(4), pp.370-380.

[25] Gogoi, P. and Nath, N., 2021. Indigenous knowledge of ethnomedicinal plants by the Assamese community in Dibrugarh District, Assam, India. *Journal of Threatened Taxa*, 13(5), pp.18297-18312.

[26] Singh, S. and Dixit, A.K., Pollendiversity of some ethnomedicinal plants of Chhattisgarh, India.

[27] Sapiens, K., Nagal, P. and Prakash, P., 2021. Ethno-medicinal Plants of Sihawa, Chhattisgarh Used in Herbal and Folk Remedies in Indian System of Medicine. *Int. J. Phar. & Biomed. Rese*, 8(3), pp.6-12.

[28] Dixena, D. and Patel, D.K., 2019. Plants as a source of Medicine among the Tribes residing in Kota block of Bilaspur district (CG) India. *Flora and Fauna*, 25(2), pp.195-203.

[29] Sheikh, D.K. and Dixit, A.K., 2018. Ethnomedicinal importance of some invasive plants of Chhattisgarh, India. *Bulletin of Pure & Applied Sciences-Botany*, 37(2), pp.58-66.

[30] Shrivastava, P., 2019. Ethnobotanical survey in APIACEAE plants in KABEERDHAM, Chhattisgarh, India. *World J Pharmaceut Res*, 8(6), pp.1579-1585.

[31] Pandey, A.K., 2021. An Ethnobotanical Study of Medicinal Plants in Atal Nagar (New

Raipur) of Chhattisgarh, India. *International Research Journal of Plant Science*, 12(1), pp.1-18.

[32] Sharma, H.S., 2019. A survey on the leafy vegetables of Kondagaon area of Bastar Chhattisgarh. *J Emerg Technol Innov Res*, 6(6), pp.325-337.

[33] Sharma, T., Bhide, B. and Acharya, R., 2018. Ethnomedicinal Claims on Wound Healing Activity of Certain Leaf Drugs-A Review. *International Journal of Ayurvedic Medicine*, 9(2), pp.42-78.

[34] Sharma, H.S.L., 2019. Phytosociological study of ethno medicinal leafy vegetable flora of district Kondagaon Chhattisgarh.

[35] Rawat, S., Nagar, B., Kumar, M., Kunwar, R., Pala, N.A., Bhat, J., Panuli, R.M. and Bussman, R.W., 2020. Indigenous Knowledge and Application of Ethnomedicinal Plants in Western Himalayas.

[36] Prajapati, S.K., Sharma, K. and Singh, P.K., 2018. Plant diversity in tropical dry deciduous forests of Jashpur, Chhattisgarh with special reference to their ethnomedicinal uses. *Tropical Ecology*, 59(3), pp.505-514.

[37] Mahato, D. and Sharma, H.P., 2018. Kali Haldi, an ethnomedicinal plant of Jharkhand state-A review.

[38] Malviya, J., 2018. SOME ETHNO MEDICINAL PLANTS USED BY TRIBAL'S FOR TREATMENT OF TUBERCULOSIS IN (PATANKOT) CHHINDWARA DISTRICT OF MADHYA PRADESH. *Pharma Science Monitor*, 9(1).

[39] Buha, M.M. and Acharya, R., 2020. Ethnomedicinal Claims on *Mallotus philippensis* (Lam.) Muell. Arg.: A Review.

[40] Lahare, R.P., Yadav, H.S., Bisen, Y.K. and Dashahre, A.K., 2021. Estimation of Total Phenol, Flavonoid, Tannin and Alkaloid Content in Different Extracts of *Catharanthus roseus* from Durg District, Chhattisgarh, India.

[41] Dixena, D. and Patel, D.K., 2020. Herbaceous climber medicinal plants recorded from Kota, Bilaspur, Chhattisgarh in India.

[42] Panjaitan, R.G.P. and Yuliana, Y.G.S., 2021. Ethno-Medicinal Plants Used for Medication of Jaundice by The Chinese, Dayak, and Malays Ethnic in West Kalimantan,

Indonesia. *Pharmacognosy Journal*, 13(4).

[43] Chandra, U., 2019. STUDY ON THE MEDICINAL PLANTS FOUND IN SAKRI BLOCK OF TAKHATPUR, CHHATTISGARH.

[44] Chanda, S. and Ramachandra, T.V., 2019. Sacred Groves—Repository of Medicinal Plant Resources: A Review. *Research & Reviews: Journal of Ecology*, 8(1), pp.12-20.

[45] Mishra, V.K., Shukla, P.N., Singh, G., Gupta, D. and Durge, G.B., 2021. Ethnomedicinal applications of forest plants for the treatment of common ailments by Gond and Madia tribes of Maharashtra, India. *Environmental Sustainability*, 4(1), pp.123-142.

[46] Tiwari, S.K., 2021. Diversity and Socioeconomic Importance Of Different Medicinal Plants in Korba Chhattisgarh India. *Frontiers in Science and Technology in India*, p.50.

[47] Dixena, D. and Patel, D.K., 2020. Medicinal plants used for dental problem and for Anti-diabetic purpose by the tribes in Kota block, Bilaspur (CG). *Journal of Pharmacognosy and Phytochemistry*, 9(5), pp.615-620.

[48] Soni, S., 2018. Traditional and Indigenous uses of medicinal plants by Local Tribes in Surguja Chhattisgarh with Special References to Udaipur and Lakhanpur Block. *World Journal of Pharmaceutical Research*, 7(12), pp.621-627.

[49] Biswas, D. and Jadhav, M.A., Diversity Of Medicinal Plants In Kalinga University, New Raipur (CG). *European Journal of Molecular & Clinical Medicine*, 7(3), p.2020.

[50] Jain, M., Shrivastava, P.N. and Samar, R., 2018. Survey of ethnobotanical medicinal plants used by the people of district Guna, Madhya Pradesh, India. *Int J Life Sci Sci Res*, 2455, p.1716.