

Ethno-Medicinal Plants Used for Treatment of Covid-19 In the Rural Regions of Wardha District, Maharashtra State, India

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Abstract: The present study is based on the field investigation of various parts of plants used by tribal of Wardha district to manage Covid -19 contagious disease and related problems. Use of the plants to the humankind is known since time immemorial. Corona viruses are a group of related RNA viruses that cause diseases in Birds and Mammals. They cause respiratory tract infection that can range from mild to lethal in humans. Symptoms of Covid -19 are variable, but often include fever, cough, headaches, fatigue, breathing difficulties and loss of smell and taste. The present paper deals with study regarding the plants and their parts used to manage Covid -19 symptoms, 45 plant species belonging to 41 genera and 24 families were recorded during the present study. Almost all the plant species used in Covid -19 diseases are used in traditional medicine by tribal and rural people. Conservation of some of these plant species by commercial cultivation and traditional methods is necessary.

Keywords: Ethno-botany; Covid -19; Family; Genera; Wardha.

INTRODUCTION

At the beginning of the year 2020, corona virus epidemic that appeared in Wuhan (Central China) spread in a frightening and turbulent to several continents and turned into a pandemic, then into a health crisis that is upsetting world balance according to WHO, in the beginning of the pandemic Covid -19 there was no specific treatment, to cure or prevent the disease. Medicinal and aromatic plants, especially, those frequently used in traditional medicine play a very important role in preventing Covid- 19. Ayurveda is a traditional Indian system of medicine that promotes use of several herbs, spices and roots that helps to boost the immune system naturally (Cotton 1997, Samant *et al.*, 1998). Traditionally, ethno-

medicinal plants are used according to their nutritional benefits and their ability to strengthen immune system. A strong immune system helps the body fight against viral, bacterial as well as other infections. It is in common practices to drink boiled turmeric milk, plant decoction (Kadha), and applying medicated coconut oils in nasal passage and performing steam inhalation with *Zingiber* or *Eucalyptus* oil (Chopra *et al.*, 2021)

According to World Health Organization around 80% of the world population uses herbal medicines for primary health care. India is a home of several medicinal plants used as traditional medicines. They use different parts of the plants during different occasion like birth of child, marriages, festivals, worship of gods, worships of spirits and different types of diseases. In the present paper, some important medicinal plants were used to prevent Covid- 19 and strengthen the immune system by rural and tribal peoples of Wardha district.

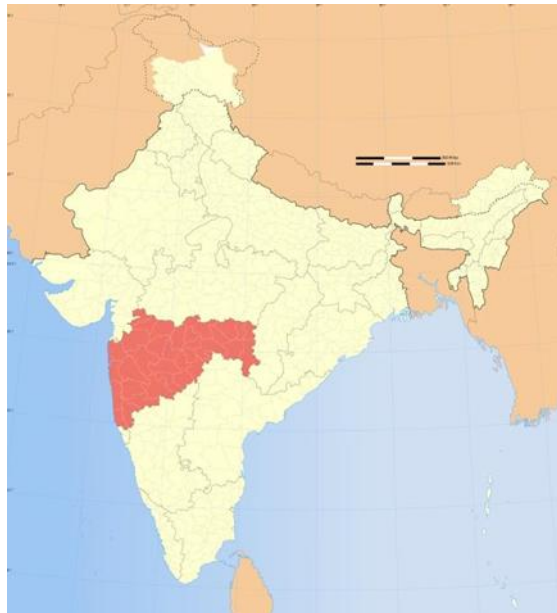
STUDY AREA

The present ethno-medicinal study has been carried out in Wardha district of Maharashtra has a dry tropical weather climate with 1100 mm. Rainfall in the highest range of temperature the maximum temperature is 47.9 °C and Minimum temperature is 30 °C and in the range of lowest temperature the maximum temperature is 23 °C. and minimum temperature is 10.2 °C. Present study site is at an elevation of 234 meter (767 feet) at the latitude of 78.61°East and longitude of 20.71°North. The land scape of the district has a typical seasonal monsoon, where people are engaged in agriculture.

Wardha district occupy about 6310Km² of the total

geographical area in which forest occupy 576.63Km². There are eight tehsils, 1376 villages and 13 towns. As per the census of India 2011, Wardha district has population of 1,300,774 of which 668,385 are male and 632,389 are female of the total population 40% of

population lives in urban areas and 60% population lives in rural area. The present investigation therefore attempts to study medicinal plants used by tribals and rural people for Covid-19 diseases and related problems.



Map.1. India showing Maharashtra state. Map.2. Wardha District showing tehsils.

METHODOLOGY

The information of plants used on Covid-19 diseases was collected by interviewing the elder person, local informers, as well as traditional healers. The information regarding the plants and their parts used at the time of Covid-19 diseases its importance, beliefs and benefits was collected and noted. The information about the medicinal use and importance of the plants used during the Covid-19 problems was collected by interviewing the traditional healers. The plants were collected and identified with the help of available floras. Hooker, (1872-1897), 'Flora of British India' Vol. I-VII. Crooke, (1901-1908), 'Floras of Presidency of Bombay', Acharya, (1985) 'Floras of Wardha District' and Ugemuge, (1986), 'Floras of Nagpur district'. Herbarium specimen were deposited in the Department of Botany, R. S. Bidkar College, Hinganghat, district Wardha (Maharashtra State). The habit of the plants was categorized into four classes' herb, shrubs, trees

and climbers. Plant parts used was categorized into leaves, roots, stem, aerial part, seed, fruit, flower oil, sap, bulb and shoot. The information about the plants i.e. the Botanical name, Family, Local name, Plant parts used and its ethno-medicinal used was noted.

OBSERVATION AND RESULT

About 45 species of plant are documented in the present investigation in which some common plant species are *Eucalyptus globulus*, *Syzygium aromaticum*, *Citrus limon*, *Citrus limetta*, *Mentha pulegium*, *Andrograpis paniculata*, *Azadirachta indica*, *Cinnamomum verum*, *Zingiber officinalis*, *Curcuma longa*, *Withania somnifera*, *Tinospora cordifolia*, *Phyllanthus emblica*, *Ocimum sanctum*, *Cassia fistula*, *Allium sativum*, *Aegle marmelos* to manage Covid-19 symptoms. Various plants and their uses are summarised in given table.

Sr. No.	Botanical name	Family	Local name	Plant parts used	Ethno-medicinal used
1.	<i>Adhatoda vasica</i> L.	Acanthaceae	Adulsa	Leaf	Yellow leaf eaten to relive from Asthma and

					cough.
2.	<i>Aegle marmelos</i> (L.) Corr. Serr.	Rutaceae	Bael	Bark	Decoction of the bark used to treat fever and cough.
3.	<i>Agave Americana</i> L.	Asparagaceae	Ghaypat	Sap	Plant used for antiviral purposes.
4.	<i>Allium sativum</i> L.	Liliaceae	Lasoon	Bulb	Raw eaten used to relive from common cold or flu.
5.	<i>Calotropis procera</i> (Ait.) R. Br.	Aslepiadaceae	Rui	Flower	Dried powder of petal with honey is used in whooping cough.
6.	<i>Andrograpis paniculata</i> (Burm.f.) Nees.	Acanthaceae	Bhuineem	Aerial part	Preparing decoction of aerial parts by boiling used to relive fevers.
7.	<i>Vernonia anthelmintica</i> (L.)Willd.	Asteraceae	Kadu Karle	Seeds	Baked seeds in milk are used on respiratory diseases and asthma.
8.	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Kadu neem	Leaf	Leaves are boiling in water and bath to relive skin infection and Fever.
9.	<i>Cassia fistula</i> L.	Fabaceae	Amaltas	Seed	Infusion is used for sore throat and cough.
10.	<i>Ceratonia siliqua</i> L.	Fabaceae	Carob	Fruit	Decoction of fruit is used cough and Diarrhoea
11.	<i>Cinnamomum camphora</i> (L.)J.Prest.	Lauraceae	Camphor tree (Kafur)	Oil	Oil is used to treat muscle joints and skin rash.
12.	<i>Cinnamomum verum</i> J. Presl.	Lauraceae	Kalmi	Bark	Boil in water and drink in the form of tea.
13.	<i>Citrus limetta</i> Risso.	Rutaceae	Mosambi	Fruit	Drink juice Enhance the immunity.
14.	<i>Citrus limon</i> (L.) Osbeck.	Rutaceae	Limbu	Fruit	Drink juice to boost the immunity.
15.	<i>Citrus sinensis</i> (L.) Osbeck.	Rutaceae	Santri	Fruit	Drink juice enhance the immunity.
16.	<i>Curcuma longa</i> L.	Zingiberaceae	Halad	Rhizome	Drink boil milk with turmeric powder to relieve cough.
17.	<i>Ehretia laevis</i> Roxb.	Boraginaceae	Ajanvruksh	Bark	An infusion of bark is used as a gargle for throat infection.
18.	<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Nilgiri	Leaves	Leaves and oil are used for steam inhalation to relive from common cold.
19.	<i>Glycyrrhiza glabra</i> L.	Fabaceae	Jeshthmadha	Root	Powder infusion used for cough, joints pains and shortness of breath
20.	<i>Hibiscus syriacus</i> L.	Malvaceae	Lal ambadi	Flower	Infusion skin rash, diarrhoea, cough and muscle joints pains
21.	<i>Juniperus thurifera</i> L.	Cuppressaceae	Dhupali	Aerial part	Fumigation cone of the plant used to treat cough, nausea-vomiting.
22.	<i>Laurus nobilis</i> L.	Lauraceae	Tamal patra	Leaves	Leaves are used to relive from muscle joints pains, weakness and skin rash.
23.	<i>Celocia argentea</i> L.	Amaranthaceae	Kombada	Root	Root powder is used against cough and asthma.
24.	<i>Malva neglecta</i> Wallr.	Malvaceae	Mudra	Leaves	Boiled leaves are used to relive from cough, weakness and fever.
25.	<i>Melissa officinalis</i> L.	Lamiaceae	Lemon Balm	Leaves	Extraction of leaves is used to relieve sore throats and cough.
26.	<i>Mentha pulegium</i> L.	Lamiaceae	Pudina	Aerial part	Infusion of leaf used to relive from Headaches, sore throats, nausea, vomiting, and fever
27.	<i>Mentha rotundifolia</i> (L.) Huds.	Lamiaceae	Padina	Aerial part	Infusion of leaf used to relive from nausea, vomiting, and fever.
28.	<i>Morus alba</i> L.	Moraceae	Tuti	Fruit	Fruit decoction is used on skin rash, Weakness and cough.
29.	<i>Nerium oleander</i> L.	Apocyanaceae	Kaner	Leaves	Extract used to treat in asthma.
30.	<i>Nigella sativa</i> L.	Ranunculaceae	Black cumin (Kaloj i)	Seed	Infusion of seed is used to treat skin rash and weakness.
31.	<i>Ocimum basilicum</i> L.	Lamiaceae	Tulas	Aerial part	Infusion of leaf used to treat cough.
32.	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Awala	Fruit	Fruit juice is used to against the viral attack.
33.	<i>Piper nigrum</i> L.	Piperaceae	Kalimiri	Fruit	Drink juice from these seeds increasing immunity.

34.	<i>Acalypha indica</i> L.	Euphorbiaceae	Chuda	Shoot	Leaf juice is used to treat cough.
35.	<i>Rosmarinus officinalis</i> L.	Lamiaceae	Rozmari	Aerial part	Infusion and Fumigation
36.	<i>Salvia officinalis</i> L.	Lamiaceae	Saj	Leaves	Infusion of leaves is used to gargle to cure throat infection and shortness of breath.
37.	<i>Sideritis scardica</i> Griseb.	Lamiaceae	Mountain tea	Flower	Flower infusion is used to relieve sore throat and cough.
38.	<i>Solanum nigrum</i> L.	Solanaceae	Kamoni	Fruit	Fruit are used antiviral activity, asthma and cold.
39.	<i>Syzygium aromaticum</i> (L.) Merr.	Myrtaceae	Lavang	Flower	Flower bud used to treat throat infection and boil to prepared khada (decoction).
40.	<i>Thymus vulgaris</i> L.	Lamiaceae	Ajvayan	Aerial part	Extract from the plant used to treat respiratory diseases like cough, bronchitis and asthma.
41.	<i>Tilia tomentosa</i> Moench.	Malvaceae	Ain	Flower	Infusion of flower is used to treat sore throats, cough and headache.
42.	<i>Tinospora cordifolia</i> (Thunb.) Miers.	Menispermaceae	Gulvel	Aerial part	Aqueous extract is used against antiviral activity.
43.	<i>Trigonella foenumgraecum</i> L.	Fabaceae	Methi	Seeds	Sprouted seeds are eaten to treat joints pains.
44.	<i>Withania somnifera</i> (L.) Dund.	Solanaceae	Ashwagandh a	Aerial part	Extract of the root used to treat antiviral activity.
45.	<i>Zingiber officinalis</i> Roscoe.	Zingiberaceae	Adarak	Rhizome	Tea made from the rhizome is used as against the common cold.

DISCUSSION AND CONCLUSION

The survey was conducted frequently in the different tehsil of Wardha district. It has been observed that many plants are the great source of medicine especially in traditional medicine (Ayurveda), which is useful in the treatment of various diseases (Bako *et al.*, 2005). The use of plant species of the Himalaya, as medicine has been known for ancient times and about 1748 medicinal plants are reported from Indian Himalaya, (Samant *et al.*, 1998).

Plants parts used in Covid-19 diseases are Aerial part (10), Leaf (08), Fruit (08), Flower (5), Bark (3), Root (02), Rhizome (2), Seed (4), Oil (1) Bulb (1) and Sap (1). In the present study it is noted that, 45 medicinal plants used by the villagers of the Wardha district to manage covid-19 symptoms. All these species belong to Dicotyledons, Monocotyledons and one Gymnosperms of these families included in the study Family Lamiaceae is a dominant Family with eight species followed by Family Rutaceae, and Fabaceae with four species each, Family Lauraceae and Malvaceae represented by three species each and Acanthaceae, Myrtaceae, Solanaceae and Zingiberaceae each with two species. Family Asteraceae, Asparagaceae, Cupressaceae, Apocyanaceae, Anacardiaceae, Verbenaceae, Pieraceae, Menispermaceae, Phyllanthaceae,

Acanthaceae, Boraginaceae, Moraceae, Meliaceae, Ranunculaceae and Liliaceae each represented by one species. These observations were coinciding with enumeration of earlier ethno-Botanists. Gairola *et al.*, (2013) reported 50 plant species used for the treatment of dysentery and diarrhoea, by the Bhoxa community of the district Dehradun, Uttarakhand, India. Singh (2020) reported 5 magical spice and herbs that can use to boost immunity against Covid -19. Phumthum *et al.*, (2021) reported 60 medicinal plants specie used for treating mild Covid -19 symptoms among Thai Karen and Hmong. Tejada *et al.*, (2021) reported 17 medicinal plants species for prevention of the respiratory symptoms of Covid-19. Chopra *et al.*, (2021) reported 11 plants species used in the treatment of Covid -19. Ayalur and Malik (2021) reported 8 plants species against the Covid -19. Gadge (2021) reported 17 plant species used as immunomodulators and helps to fight against the viral infection. Pushpalatha *et al.*, (2021) illustrated 34 plant species used as alternative for preventing Covid -19 in a high risk population. Shinde *et al.*, (2022) illumerated 17 traditional herbal medicinal plants species belonging to 13 different families are being used extensively for curing Covid-19 by tribal communities in the Nanded District. Mishra *et al.*, (2023) reported 39 plants used to obtain phytochemicals that possess antiviral activity against Covid -19. Atre *et al.*, (2023) reported 355 medicinal plant species from the Melghat region used

to treatment of respiratory problems. The present study was also noted the tribal people using plants for treatment of Covid -19. Silva *et al.*, (2023) reported 63 medicinal plants species used to prevent Covid-19 Pandemic in Brazil. Gaikwad *et al.*, (2023) reported 15 plant species used to effective in the preventive and supportive management of Covid -19 through boosting the immune system.

In India, the ministry of Ministry of Ayush in the year 2021 has issue an advisory on preventive practices for prevention of Covid-19, primarily focusing on boosting individual immunity. It emphasizes simple measures like drinking warm water thought the day, more use of spices like turmeric, cumin, coriander, Garlic on cooking, intake of Chyavanprash in the morning and drinking golden milk with turmeric twice a day. During this period herbal tea or decoction (Khada) made from Kalmi, Ginger, Kalimiri, Lavang, Dalchini, and Tulsi leaf with or without sugar once or twice a day is also recommended.

In the present study during Covid-19 crisis it is noted that uses of spices and herbs play a significant role in boosting immunity in tribals of Wardha district against viral infection. It is analysed that Dalchini, Black pepper, Turmeric, Zinger, Tulsi, Clove, Lemon, Orange, and Gulwel are commonly used by the people to prevent from Covid-19. In tribal and rural peoples the use of these spices and herbs which have the antioxidant, antimicrobial, antiviral and immune-boosting properties are common in their day to day life which results in comparatively low mortality in India.

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