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Howrah medicinal plants and their potential against COVID-19

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Abstract
Medicinal Plants are the fundamental unit of traditional medicine system. The use of this kind of plants has increased during COVID - 19 pandemic and it places a significant role for the people of Howrah. Various local medicinal plants are used during pandemic for boosting immunity. Medicinal herbs have been used for curing different ailments since thousands of years. Even in modern era, the rural population of third world countries is primarily relying on medicinal plants for healthcare. An ethno - medicinal study was carried out in order to document the indigenous knowledge of medicinal herbs in Buner. The area lies in Hindu Kush Mountains and exhibits diverse flora and immense potential regarding traditional knowledge of medicinal plants. The most frequently used medicinal herbs in Howrah district are includes as *Acorus calamus*, *Ajuga bracteosa*, *Trachyspermum ammi*, *Paeonia emodi*, *Skimmia laureola*, *Thymus serphylum*, *Valariana jatamansii* and *Viola biflora*. These plants collected from wild and sold in the local markets for earning livelihood contribute to the socio-economic of the area.

Keywords: medicinal plants, immunity booster, antiviral, covid-19, traditional medicines

Introduction
Now world is in great depression due to the massive spread of novel corona virus i.e., SARS- CoV-2, which has affected majority of the countries with more than 15.78 million confirmed cases and about 0.64 million deaths as of 26th July 2020. Moreover, persons with weak immune system are found to be the easy targets of this COVID-19 disease including old age persons, children and patients with pre-existing clinical history like diabetes, cancer, respiratory disorders etc. Considering high mortality associated with this disease, whole world is struggling hard to discover effective therapeutic solution for COVID-19 treatment either by developing new antiviral drugs or by repurposing the existing antiviral drugs. The commercially available antiviral medicines including ritonavir ribavirin, lopinavir, remidisavir alone or in combination with chloroquine, hydroxychloroquine, and interferon- alpha are found to show some potential against SARS-CoV-2 infections. In this situation the local people of Howrah area increased the immunity level by using locally medicinal plants, like Tulsi, Neem, Kalmegh etc. They thought that this all are remedies for them without any side effect and day by day they are very passionate about the consuming of medicinal plants compassing any synthetic product and they got positive result. In my project area huge local medicinal plants are grown but due to unawareness of some people cutting those plants which is very threatened for us. In this paper I almost highlighted the awareness of medicinal plants uses against illness and boosting the people immunity in this pandemic situation and people of this area (Howrah) get challenges in this pandemic situation for using those medicinal plants. In the present scenario of lack of any proven medicines/vaccines for COVID-19 cure, potential antiviral and immune booster herbal medicines, extracts and formulations can be good remedy which can help in lowering down the global mortality rate related to COVID-19Ministry of Ayush, India has already released the self-care guidelines for preventive health measures and boosting immunity with special reference to respiratory health using traditional Ayurveda and natural herbs.

Aim and Objective
The proposed study aims to know the diversity of medicinal plants in the Howrah of the District Howrah in West Bengal state. This area vegetation is dominated by number of medicinal plants from the different families. The medicinal plants of different families are medicinally important to cure various types of diseases in mankind as well as domestic livestock and wild animals. Hence as a need of present days and for the growth of botanical sciences, this study has been proposed. Besides, due to pollution, monoculture of fruit plants as well as silviculture, destruction of natural habitat of medicinal plants for various reasons like industrialization, urbanization as well as agriculture and tourism, hundreds of medicinal plant species are threatened and striving for their existence. Hence to achieve the goal of conservation and cultivation of threatened medicinal plants is significant. It can be achieved by generation of awareness in the farmers and common people by proper training programme and employment in the same field.
The plan of this work proposed is as follows…

1. To survey of medicinal plants found in Howrah of District Howrah.
2. To selection of the sites for the survey.
3. To Frequent visit to the selected sites at a fixed regular interval of 15 days.
4. To study of present status of the medicinal plants in Howrah, Howrah.
5. To discussion and interviews with the traditional healers.
6. To explore the ethano-medicinal knowledge to the local people of Howrah, Howrah.
7. To collection of native rare medicinal plants for the correct identification and future references.

8. To understand different features of medicinal plants of this area.
9. To make awareness of local people about utility of medicinal plants.
10. To study physico -chemical properties some selected medicinal plants.

Review of Literature

Review of Literature is the review of the past researches which have been researched and guide in same field. The review is done in order to have an idea about the coverage of research work done in particular field and to have a look about the results of the previous researches. The previous research helps in selecting the tentative objectives for further study. In my research study the following research papers are included which are based on this ethnobotanical and ecological research. Ethnobotanical studies in different regions and pertaining to different tribes of India were taken up, Central India – Mid Bihar, Orissa; North Eastern India - Arunachal Pradesh, Assam, Meghalaya; Western India - Maharashtra, Nilgiris, Gujarat, etc. and Jain, which provided as a real and true introduction to Indian ethnobotany. The entire work on ethnobotany in India was summarized one by one [1, 2]. Presently, there are a numeral of institutions and universities where ethnobotanical studies being carried out dynamicly in India. India has huge ethnobotanical facts from primeval time. Older Indian literatures like Rigveda, Ayurveda, Sushrut samhita, Charak samhita etc. are the, having deeply knowledge of plants as medicines or remedies. The work on ethonobotany was done by many research scholar or scientist and few of them are followings [3] carried out the curative plants of mostly Pakistan. He reported 52 native medicinal plants species which is belongs to 25 angiosperm's families. These plants hold their significance in the habitual remedies of India and Pakistan. Hussain and Khaliq (1996) reported that natives living on the hilly region of Pakistan and these local communities generally use plants in various ways e.g. medicines, fodder, food, timber wood and fire wood. Manandhar (1997) [4] observed thirty one species of unreported wild food and other foodstuff plants utilized by tribal communities in different parts of Nepal. Dhar *et al*. (2000) [5] reported the medicinal plants species which is found in the Himalayan region are very specific and significant or useful in curing much disease. Shinwari and Khan (2000) [6] reported the customary usage and the saving status of one hundred sixty medicinal plants explained from the margalla hills national park, Islamabad. It was moreover found that in the recent times; several tries are prepared to document and exploit the local conventional awareness regarding curative plants. Sharma and Kumar (2013) [7] described mostly natural products and herbal remedies have been recommended for the management of diabetes in Rajasthan. So many of plantsused in control of insulin harmone which is helpful to regulate the glucose level in body. Joana Camejo-Rodrigues *et al*. (2003) [8] concluded an ethnobotanical study conducted in Serra de Sao Mamede, Natural Park of Portugal. There are easy interview concerning 45 informant give data about 165 valuable plants, 150 of which had therapeutic and aromatic utilized 224 well-known names were note downed, there are 98 names are included first time. In this research, researchers talk about vey most important plant with their vernacular name, local name used portion, all important utilization like disease management, prepared method, &management procedures, citations too mentioned. Kulip, J. (2003) [9] researcher reported on medicinal and additional most valuable plant use usually by the muruts in sabah, Malaysia a sum of ninety one species of plants were documented and accumulate through the survey. Among of them there are sixty eight medicinal plant species and sixty four species of other most valuable plants. Consciousness actions in primary and secondary schools in Malaysia on the significance of plants and their ecological atmosphere, and government policies on medicated plants, comprise contribute significantly towards the conservation of native customary information of valuable plants. Sinha and Dixit (2003) [10] suggested the ethno-medicinal usage of three plant species in Madhya Pradesh; Ventilogo denticulata and rosera burmanni for relief in urin infection and spermatorrhoea and Leea compactiflora useful in asthma disease. Chhetri (2005) [11] carried out the survey of herbal drugs that is used by the tribal people in the Khangchendzonga national park region in Sikkim, India. A study report on one hundred ten species of ethnomedicinal plants belongs to one hundred genera and seventy families. Qureshi and Ghufran, (2005) reported the herbal medicine plays a very imperative function in the rustic regions in Pakistan. Several locally generate drugs are at a standstill exploited by the local public as domestic therapy for the handling of a lot of syndrome and too for the treatment of different illness.

Materials and Methods

My study area is Bally (Basukati, Nischinda, Madhyapara, Baruapara) which is connected by road and rail with Howrah and Kolkata (South), Kharagpur (West), Burdwan (Northwest) and Navadwip (North), and it is a steamer station for traffic along the Hugli. The climate of Howrah is tropical. The temperature here averages 26.0 C. The rainfall here is around 1617 mm. Some Medicinal plants which are very common and suitable for cultivation and also seen in this area, like - Tulshi, Neem, Aloevera, Papaya, Nayantara, Guava, Thankuni, Bittergourd, Kalmegh, Basak, Seuli, Brahmi, Beal etc.

Data Collection

A set of questionnaire forms were prepared by Google Form developer. The Google Form was initially tested to validate and understand the response rate from respondents. I wrote a consent message to all the people, reached with the form and also placed clearly written consent message at the top of the form. Additionally, Iasked a consent question at the beginning of the form for written consent from each respondent. I reached a total of 235people throughout the survey in May 09, 2021, to June18, 2021 and provided information about the different variables which used for the study.

Sample population

A total of 235 respondents participated in the survey. The age of the respondents varied from 16 to 76 years. Among them, 65.51%werebelow30yearsofage; all of the respondents were literate, and most of them (69.5%) had attended University. There were more male respondents than female.

Data analysis

The status of medicinal plants used during COVID-19 (increase, decrease, same, and Never used) and

recommendation of medicinal plants (strong, moderate, low, and never) was calculated and shown in the bar graph using Microsoft Excel 2007.

The medicinal plants recorded were tabulated in the table with respective scientific, local, and English names with their family and parts (root, stem, leaves, rhizome, roots) used. The relationship between information sources and respondent characteristics was shown in the graph and statistically analyzed.

Result

Table 1: Medicinal Plant found in Howrah and their medicinal role

Local name	Botanical name	Plantation status	Family	Role
Neem	*Azadirachta indica*	natural	Meliaceae	▪ Leaf is used for leprosy eye disorders, bloody nose, intestinal worms, stomach upset, skin ulcers, diseases of the heart and blood vessels, fever, diabetes, gum disease and liver problems. The leaf is also used for birth control and to cause abortions.
Tulsi	*Ocimum tenuiflorum*	Artificial	Lamiaceae	▪ The leaves strengthen the stomach and help in respiratory diseases. It strengthening effect on the kidney.
Aloe vera	*Aloe barbadensis miller*	Artificial	Asphodelaceae	▪ It help protect our skin. It also been shown to neutralize the effects of ultraviolet (UV) radiation, repair your skin from existing UV damage, and help prevent fine lines and wrinkles.
Papaya	*Caria papaya*	Natural	Caricaceae	▪ It contain high levels of antioxidants which reduce the risk of heart disease. It prevent the oxidation of cholesterol. It also reduce the risk of heart disease.
Kalmegh	*Ardrographis paniculata*	Artificial	Acanthaceae	▪ It acts as a digestive stimulant, hepato-protective & improves liver functions, blood purifier, reduce inflammation, laxative, it also acts on respiratory and metabolic disorders.
Neem	*Azadirachta indica*	Artificial	Meliaceae	▪ Leaf is used for leprosy eye disorders, bloody nose, intestinal worms, stomach upset, skin ulcers, diseases of the heart and blood vessels, fever, diabetes, gum disease and liver problems. The leaf is also used for birth control and to cause abortions.
Curry	*Marraya koenigii*	Artificial	Rutaceae	▪ Its leaves help heart function better, fights infections and can enliven our hair and skin with vitality.
Nayantara	*Madagascar periwinkle*	Artificial	Apocynaceae	▪ It used for treating a host of health anomalies including diabetes, sore throat, lung congestion, skin infections, eye irritation and even reduces the risk of cancer.
Akanda	*Calotropis gigartea*	Artificial	Apocynaceae	▪ .It effective in treating skin, digestive, respiratory, circulatory and neurological disorders and was used to treat fevers, elephantiasis, nausea, vomiting and diarrhea etc.
Pudina	*Mentha arvensis*	Artificial	Lamiaceae	▪ It helps the enzymes to digest food. It know to calm stomach cramps and helps beat acidity and flatulence.
Vasaka	*Justicia adhatoda*	Artificial	Acanthaceae	▪ It holds high significance in treating the common cold, cough and flu symptoms. It also reduces chest and nasal congestion gets rid of excess sputum and stops nasal discharge.
Curry	*Marraya koenigii*	Artificial	Rutaceae	▪ Itsleaveshelp heart function better, fights infections and can enliven our hair and skin with vitality.

Table 2: Some Diseases of Medicinal Plants

Name of the plant	Disease	Symptoms	Treatment
Aloe Vera	Alternaria Leaf Spot	The symptoms appears as small, circular to oval dark brown necrotic sunken spots on the leaves. Sometimes, such leaves dry permanently.	The disease can be managed of spraying of mancozeb-45(0.25%).
Vasaka	Leaf Rust	The fungus produces dark brown slightly raised irregular spots measuring 5-10 mm in diameter on the leaves. The spots appear on both the surface of leaves.	This disease can be managed by spraying with carbendazim 50 WP (0.1%).
Mint	Powdery Mildew	The disease first appears on young leaves as slightly raised blister like areas that soon become covered with greyish, white & powdery growth of the pathogen on mature leaves.	Application of wettable sulphur can checks the disease effectively.
Tulsi	Downy Mildew	Symptoms of downy mildew initially appear as the yellowing of tulsi leaves. An Irregular shaped chlorosis or typical vein bounded symptoms are visible on leaves.	Manczebor Metalaxy can be applied for managementof diseases.

Table 3: Potential Medic Properties in Howrah Medical Plants

Name of the Tree	Health Benefit			
Neem	Skin and Blood. Neem is famous and celebrated for promoting healthy skin and a clear complexion. Due in part to its bitter taste, it has an	Blood Sugar. The purifying benefits neem has on the body's blood and circulation also help support healthy blood sugar levels already in the normal	Metabolism. Neem's kapha-reducing properties encourage proper fat and water digestion and elimination, keeping water retention from accumulating in	Skin Moisture and Softness. Neem's skin benefits work both internally and externally. As an external application, Neem oil or soap helps soothe and

	incredibly cooling effect on the body, reducing excess heat that can manifest as skin blemishes.	range.	the body.	lubricate the skin.
	Skin and Blood: Neem is famous and celebrated for promoting healthy skin and clear complexion. Due in part to its bitter taste, it has an incredibly cooling effect on the body, reducing excess heat that can manifest as skin blemishes	Blood Sugar: The purifying benefits Neem has on the body's blood and circulation also help support healthy blood sugar in the normal range	Metabolism: Neem's kapha – reducing properties encourage proper fat and water digestion and elimination, keeping water retention from accumulating in the body	Skin Moisture and Softness: Neem's skin benefits work both internally and externally. As an external application, Neem oil or soap helps soothe and lubricate the skin
Aloevera	Aloe Vera, when formulated into a properly designed personal care regimen, can treat, exfoliate, restore, reveal and provide constant, impressive nutrition to the human skinAloe vera is rich in vitamin C, E and beta carotene which gives it its nourishing and anti-ageing qualities. It can moisturise the skin without making it greasy, which makes it a great buy for those with oily skin	According to Britt Brandon, the author of The Everything Guide to Aloe Vera for Health, "Aloe vera can improve the effectiveness of your diet and maximise your weight loss potential. With ample amounts of vitamins and minerals that contribute to weight-loss, as well as amino acids, enzymes and sterols, aloe vera ensures your diet is not only supportive of weight loss, but also improves the body's absorption and utilisation, improving overall health as well as weight loss success."	Aloe Vera For Hair Fall Aloe vera contains something called proteolytic enzymes which repairs dead skin cells on the scalp. It also acts as a great conditioner and leaves your hair all smooth and shiny. It promotes hair growth, prevents itching on the scalp, reduces dandruff and conditions your hair. Diane Gage, author of Aloe Vera: Nature's Soothing Healer says, "Keratin, the primary protein of hair, consists of amino acids, oxygen, carbon, and small amounts of hydrogen, nitrogen, and sulphur. Aloe vera has a chemical makeup similar to that of keratin and it rejuvenates the hair with its own nutrients, giving it more elasticity and preventing breakage	
Papaya	Asthma prevention The risk of developing asthma is lower in people who consume a high amount of certain nutrients. One of these nutrients is beta-carotene, contained in foods like papaya, apricots, broccoli, cantaloupe, pumpkin, and carrots.	Age-related macular degeneration Zeaxanthin, an antioxidant found in papaya, filters out harmful blue light rays. It is thought to play a protective role in eye health, and it may ward off macular degeneration. However, a higher intake of all fruits has been shown to decrease the risk of and progression of age-related macular degeneration Trusted Source.	Bone health Low intakes of vitamin K have been associated with a higher risk of bone fracture. Adequate vitamin K consumption is important for good health, as it improves calcium absorption and may reduce urinary excretion of calcium, meaning there is more calcium in the body to strengthen and rebuild bones.	Diabetes Studies have shown that people with type 1 diabetes who consume high-fiber diets have lower blood glucose levels, and people with type 2 diabetes may have improved blood sugar, lipid, and insulin levels. One small papaya provides about 3 grams of fiber, which is equivalent to just 17 grams of carbohydrates.
Guava	May Help Relieve Painful Symptoms of Menstruation Many women experience dysmenorrhea — painful symptoms of menstruation, such as stomach cramps. However, there is some evidence that guava leaf extract may reduce the pain intensity of menstrual cramps.	May Aid Weight Loss Guavas are a weight-loss-friendly food. With only 37 calories in one fruit and 12% of our recommended daily fiber intake, they are a filling, low-calorie snack	May Have an Anticancer Effect Guava leaf extract has been shown to have an anticancer effect. Test-tube and animal studies show that guava extract can prevent and even stop the growth of cancer cells This is likely due to the high levels of powerful antioxidants that prevent free radicals from damaging cells, one of the main causes of cancer).One test-tube study found that guava leaf oil was four times more effective at stopping cancer cell growth than certain cancer drug	May Boost Heart Health Guavas may help boost heart health in a number of ways. Many scientists believe that the high levels of antioxidants and vitamins in guava leaves may help protect your heart from damage by free radicals The higher levels of potassium and soluble fiber in guavas are also thought to contribute to improved heart health.
Thankuni	It may help treat Alzheimer's disease Gotu kola has the ability to enhance memory and nerve function, which gives it potential in treating Alzheimer's disease. In fact, one 2012 study on mice found that gotu kola extract had a positive effect on	It may help reduce anxiety and stress Researchers in an animal study from 2016Trusted Source found that gotu kola had an anti-anxiety effect on male mice that were sleep deprived for 72 hours. Sleep deprivation can cause anxiety, oxidative damage, and neuroinflammation.	It may act as an antidepressant Gotu kola's positive effect on brain function may also make it an effective antidepressant	It may help reduce appearance of stretch marks According to a 2013 review Trusted Source, gotu kola can reduce the appearance of stretch marks. It's thought that the terpenoids found in gotu kola increase collagen production in the body. This may help

	behavioral abnormalities in mice with Alzheimer's disease.	Mice that were given gotu kola for five consecutive days before undergoing sleep deprivation experienced significantly less anxiety-like behavior. They also experienced improved locomotor activity and less oxidative damage		prevent new stretch marks from forming, as well as help heal any existing marks.
Tulsi	Protective of the liver, and more generally protective against certain chemical toxins and radiation, but not contraindicated by chemotherapy (so it's safe to use while receiving chemo)	In Ayurvedic practice, common uses of tulsi include treatments for: ▪ Asthma, bronchitis, colds, congestion, coughs, flu, sinusitis, sore throat and similar ailments ▪ High blood pressure and high cholesterol ▪ Headaches, earaches, and eye disorders ▪ Skin diseases and insect bites ▪ Cramping, gastric disorders, indigestion, intestinal parasites, mouth diseases, ulcers, and vomiting ▪ Diabetes and blood sugar imbalances ▪ Joint pain and rheumatoid arthritis ▪ Kidney stones ▪ Malaria ▪ Cancer	Able to reduce the frequency and severity of asthma attacks	▪ Anti-inflammatory ▪ High in antioxidants
Pudina	Rich in Nutrients Mint is a particularly good source of vitamin A, a fat-soluble vitamin that is critical for eye health and night vision	May Improve Irritable Bowel Syndrome (IBS)is a common digestive tract disorder. It is characterized by digestive symptoms like stomach pain, gas, bloating and changes in bowel habits peppermint oil contains a compound called menthol, which is thought to help alleviate IBS symptoms through its relaxing effects on the muscles of the digestive tract	May Help Relieve Indigestion Mint may also be effective at relieving other digestive problems such as upset stomach and indigestion.	Could Improve Brain Function In addition to ingesting mint, there are claims that inhaling the aroma of essential oils from the plant could provide health benefits, including improved brain function.
Night jasmine	Arthritis is not only common among old aged people but it also affects young adults now days. It can be very annoying and can make a person deviate from his daily activities. In severe cases, it also disrupts sleep to a certain extent. In such conditions, Harsingar should be consumed due to its anti-arthritic properties to reduce inflammation and pain. It is recommended to boil the powder extracted from Harsingar in a cup of water and consume it immediately for instant relief. People who consumed it regularly usually experience relief after a prolonged usage of this herb.	Cures malaria and other fevers The leaves of Harsingar is used to treat the fever which occurs during chronic malaria. It can also be used as a remedy for high body temperature, diarrhea and nausea caused due to mosquito bites. The leaves contain beneficial soothing and healing properties which make it ideal to get rid of malaria parasites.	Anti-allergic, antiviral and antibacterial properties Harsingar oil can be used to fight bacteria such as *E.coli*, Staph infection and fungal infection. Additionally it assists in combating encephalomyocarditis, cardiovirus and semliki forrest virus. It can also be used to treat skin issues such as blackheads and pimples.	Combats breathing problems Regular consumption of Harsingar can relieve asthma symptoms. Although it doesn't cure asthma, but it does reduce the symptoms and makes it easier for a person to breathe without any hurdle. Harsingar contains beneficial and medicinal properties to provide relief from asthma symptoms.

Table 4: Weeds against Medicinal Plants

Name of the Pests	Harmful Plants	Attacking parts	Time of attacking
Aphid	*Andrographis paniculata*, *Datura metel*, *Oscimum sanctum*	Lower portion of leaf, Twig, root	All through the year but in summer season they decrease rapidly.

Scale Insect or Mealy bug	*Phyllanthus emblica, Abelmoschus moschatus, Datura metel*	Green twig, Leaf buds, Lower portion of leaf.	Throughout the year but they decrease in winter.
Green hopper/ Leaf hopper	*Abromaaugusta, Cocciniacordifolia*	Lower portion of leaf and Twig.	Throughout the year but they decrease comparatively in rainy season.
Thrips	*Allium cepa, Curcuma longa, Andrographis paniculata.*	In leaves and flowers.	All through the years
Beetle	*Calotropis gigantica, Abelmoschus moschatus, Pavonia odorata*	Leaf, Twig, Flower.	All through the years but they increase rapidly in rainy season.
Caterpiller	*Abelmoschus moschatus, Coccinea grandis.*	Leaf, Small twig.	All through the years
Spidermite, Flatmite, Yellowmite	*Azadirecta indica, Andrographis paniculata, Indicofera tinctoria.*	Lower poretion of leaf, Twig, Fruits.	Throughout the years specially in semmer

Table 5: Maximum used Medicinal Plants during Pandemic – 2020-21

Plant species	Parts Used	Utility Rate (%)
Tulsi	Leaf, Seed	75.74
Neem	Leaf, Bark	33.19
Aloevera	Leaf	13.19
Papaya	Fruit	28.93
Nayantara	Leaf	3.82
Guava	Leaf	8.08
Thankuni	Leaf	33.61
Bitter gourd	Fruit	2.12
Kalmegh	Leaf	32.34
Basak	Leaf	4.25
Seuli	Leaf	4.25
Brahmi	Whole Plant	19.57
Beal	Fruit	4.25

Table 6: Local Family Wise Highly utilised species

Name of the family	Name of the plant species	Part Used	Utility Rate (%)
Lamiaceae	Tulsi	Leaf	75.74
Apiaceae	Thankuni	Leaf	33.61
Meliaceae	Neem	Leaf, Bark	33.19
Acanthaceae	Kalmegh	Leaf	32.34
Caricaceae	Papaya	Fruit	28.93
Plantaginaceae	Brahmi	Whole Plant	19.57

Table 7: Category wise availability in Howrah (percentage)

Category	Name of species	Scientific Name	Number of plant presence	Percentage
Wild Herb	1. Tulsi	1. *Ocimum sanctum*	1. 178	1. 44.16
	2. Papaya	2. *Carica papaya*	2. 68	2. 16.87
	3. Nim	3. *Azadirachta indica*	3. 78	3. 19.35
	4. Thankuni	4. *Centella asiatica*	4. 79	4. 19.60
Wild Tree	1. Banyan Tree	1. *Ficus Religiosa*	1. 02	1. 0.63
	2. Arjuna Tree	*2. Terminalia Arjuna*	2. 10	2. 3.17
	3. Neem Tree	*3. Azadirachta Indica*	3. 78	3. 24.76
	4. Mango Tree	*4. Mangifera indica*	4. 60	4. 19.04
	5. Coconut Tree	*5. Cocos nucifera*	5. 94	5. 29.84
	6. Jackfruit Tree	*6. Artocarpus heterophyllus*	6. 31	6. 9.84
	7. Guava Tree	*7. Psidium guajava*	7. 40	7. 12.69
Cultivated Grass	Nil	Nil	Nil	Nil
Cultivated Tree	1. Mango Tree	1. *Mangifera indica*	1. 250	1. 13.29
	2. Coconut Tree	2. *Cocos nucifera*	2. 166	2. 8.82
	3. Guava Tree	3. *Psidium guajava*	3. 450	3. 23.92
	4. Papaya Tree	4. *Carica papaya*	4. 200	4. 10.63
	5. Custard Apple Tree	5. *Annona reticulata*	5. 145	5. 7.70
	6. Mosambi Plant	6. *Citrus limetta*	6. 70	6. 3.72
	7. Banana Tree	7. *Musa acuminata*	7. 600	7. 31.89
Wild Grass	1. Purple fountain grass	1. *Pennisetum setaceum*	NA	NA
	2. Teff grass	2. *Eragrostis tef*		
	3. Swollen Finger grass	3. *Chloris barbata*		
Wild Shrub	1. Rose	1. *Rosa sp.*	1. 300	1. 25.95
	2. Marigold	2. *Tagetes erecta*	2. 266	2. 23.01
	3. China rose	3. *Hibiscus rosasinesis*	3. 488	3. 42.21
	4. Lemon	4. *Citrus sp.*	4. 102	4. 8.82
Cultivated Herb	1. Aloevera	1. *Aloe vera*	1. 156	1. 14.98

	2. Rauvolfia	2. *Rauvolfia serpentina*	2. 108	2. 10.37
	3. Indian goose berry	3. *Emblica officinalis*	3. 500	3. 48.03
	4. Kalmegh	4. *Andrographis paniculata*	4. 277	4. 26.60

Table 8: House hold respondents rate after utilisation of medicinal plants

Sr. No.	Name of the Household	Using Rate (%)	Positive Feedback (%)	Negative Feedback (%)
1.	Roy House	80	75	25
2.	Mukherjee House	66.66	50	50
3.	Banerjee House	77.77	71.42	28.58
4.	Ghosh House	40	100	0
5.	Dey House	80	75	25
6.	Roy House	100	50	50
7.	Ganguly House	50	100	0
8.	Brahma House	80	75	25
9.	Chakraborty House	66.66	87.50	12.50
10.	Bhattacharya House	100	50	50
11.	Sardar House	50	100	0
12.	Patra House	60	33.33	66.67
13.	Dhali House	66.66	75	25
14.	Poddar House	88.88	62.50	37.50
15.	Das House	83.33	80	20
16.	Mondal House	100	50	50
17.	Ghosh House	50	100	0
18.	Haldar House	66.66	100	0
19.	Barman House	60	66.66	33.34
20.	Naskar House	75	77.77	22.23
21.	Ghughu House	80	75	25
22.	Santra House	60	100	0
23.	Majumdar House	50	100	0
24.	Adak House	75	66.66	33.34
25.	Naskar House	66.66	83.33	16.67
26.	Murmur House	66.66	50	50
27.	Kundu House	50	100	0
28.	Barua House	80	50	50
29.	Chaterjee House	57.14	60	40
30.	Bar House	66.66	66.66	33.34
31.	Pal House	100	50	50
32.	Naskar House	66.66	50	50
33.	Debnath House	50	100	0
34.	Saha House	83.33	60	40
35.	Das House	80	50	50
36.	Ghosh House	100	50	50
37.	Bar House	66.66	25	75
38.	Mondal House	100	100	0
39.	Dhali House	85.71	60	40
40.	Chatterjee House	60	100	0

Table 9: Side effect after consumption of Medicinal plants without consult of Practitioner

Sl No	Name of the Plants	Irritation	Feed Back Rate (%)
1.	Triphala	Diarrhea, abdominal discomfort especially high doses	12.76
2.	Guggul	Stomach upset, headaches, nausea, vomiting, loose stools	8.51
3.	Boswellia	Stomach pain, nausea, diarrhea, and an allergic rash	10.63
4.	Gotu Kola	Stomach upset, sensitivity to light, an allergic rash	4.25

Table 10: Age Wise Consumption percentage of Ayurvedic Plants during COVID-19 Era

Sl No	Name of the Particulars	Consuming Rate
1.	Old Person (65-80)	15.74%
2.	Adult (18-40)	71.48%
3.	Young Adult (5-17)	12.78%

Discussion

Medicinal plants have attracted the attention of several stake holders around the world.They have chemical diversity and can play a significant role in new drug development. In this study, the majority of respondents in Howrah reported that the use of medicinal plants has increased during COVID-19 and also believed that information about the medicinal plants has increased, and most of them recommend medicinal plants to prevent COVID-19. Researchers such as Rastogi *et al*. (2020) and Vellingiri *et al*. (2020) have claimed that medicinal plant-based treatments should be beneficial to treat and prevent COVID-19. In the past,

medicinal plants were combined with western medicine to treat a similar disease, severe acute respiratory syndrome (SARS). There is no effective medicine available so far for the treatment of COVID-19; medicinal plants are being used in Howrah that might have increased the demand for medicinal plants. Some plants are useful to treat viral disease, but COVID-19 is a new disease, and the effectiveness of the medicinal plants to cure it has not been tested yet. Therefore, the excessive use of medicinal plants, however, could be problematic and is a matter of concern. Easy access to social media which often publish unreliable advertisements might have a role to play in the increasing use of medicinal plants. Moreover, local availability of medicinal plants and an incorrect belief that medicinal plants have no side effects among people might also be responsible for the same. All the stake-holders including ethno botanists and community leaders should come together to educate people about the proper use of medicinal plants. Most of the species reported in this study are locally available and used for daily food At home. The leaves were the most used parts of the plants. The use of leaves is mainly due to the presence of active secondary metabolites.Under-ground parts, such as roots and rhizomes, are rich in bioactive constituents. However, in discriminate use of underground parts might lead to conservation threats particularly to wild species. Similarly, the use of bark in an excessive amount and the whole plant use might create

Conclusion and Findings

This study found that medicinal plants used and the beliefs related to them have increased duringCOVID-19. Medicinal plant species used to prevent COVID-19 were investigated and recorded at study area.The frequently used plants in the home were recorded more in comparison to the plants. The plants cultivation status have increased during COVID-19. The use of medicinal plants was associated with social and demographic variables. Likewise, the source of medicinal plants also varied with the demographic social factors of the respondents. This study recommends undertaking studies of medicinal plants used during COVID-19. The validity and reliability of such medicinal plants should be tested further by phytochemical and pharmacological research, and invalid information should be monitored and con-trolled in different social media platforms and communities.

Recommendation

It is recommended -

- People follow information from authentic sources related to the COVID-19 pandemic.
- Herbal medicine should take after prescribed by a qualified and registered practitioner.
- Some medicinal herbal may produce negative effects such as allergic reaction, rashes, asthma, headaches, vomiting etc. to some people, So, they should avoid take such herbal.
- Sometime excess use of medicinal plants can cause kidney failure and liver damage in some consumers because they contain toxic chemicals or heavy metals or react harmfully with other drugs, a study has found.
- Some medicinal Plant adverse effect, like Ginger may increase the risk of bleeding. So, need to take as per practitioner prescription.
- Some of the most problematic herbal such as saga, flax seed, cranberry, goji berry, chamomile and green tea can interact with some cardiovascular drugs and cause bleeding.
- If herbal medicine consuming with allopathic medicines, then inform your doctor.
- Avoid using herbal products containing heavy metals such as arsenic, lead, and mercury.
- If female user is pregnant or nursing mother, then caution taking herbal medicines.
- Overuse of herbal medicine intake should be avoided and dosing instructions must be followed.

Photo Gallery

Fig 1: Tulsi Plant

Fig 2: Aloe Vera Plant

Fig 3: Papaya Plant

Fig 4: Nayantara Plant

Fig 5: Guava Plant

Fig 6: Thankuni Plant

Fig 7: Bitter gourd

Fig 8: Kalmegh Plant

Fig 9: Aparajita Plant

Fig 10: Neem Plant

Fig 11: Basak Plant

Fig 12: Seuli Plant

Fig 13: Bael Plant

Fig 14: Pudina Plant

Fig 15: Night Jasmine

Fig 16: Curry Plant

Fig 17: Akanda Plant

Fig 18: Arrowhead plan

Fig 19: Mint Plant

Fig 20: Brahmi Plant

Fig 21: Pipal Tree

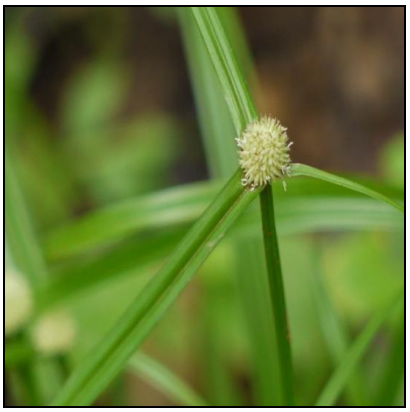

Fig 22: Nirbisi Plant

Fig 23: Basil Plant

Fig 24: Ajwain Plant

Fig 25: Bay Tree

Fig 26: Thyme Plant

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