Inhibitory Role of Herbs /plants and activity with E.coli infectious Bacteria for Medication purpose.

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Abstract

To check the antimicrobial activity of plant found in Melghat against *E coli* bacteria. In our study we found that plant have the capacity to overcome the activity of pathogenic bacteria and give natural protection against infection. For the study of 18 plant sample from Melghat forest from different region with the help of local people. Each and every plant it is enriched with medicinal quality naturally so we used parts like leaves roots seeds and fruit etc in the powder form. Among the selected 18plants three plant and their powder shows special activity against E coli bacteria that is no growth observed on treating with respective plant. Bacterial growth inhibitor due to the presence of certain biochemical component present in plant. Bacterial zone of inhibition and the plant name given as below *Chirata,Caesalpinia Bonduc, Morinda citrifolia*. These plants resist the growth of e coli bacteria on nutrient media so we conclude that these plants have medicinal value to value to cure infection caused by *E coli* bacteria.

Key words: -*Rigveda*, korkus and Gond, Baidus and Bagat,

Introduction

Life on Earth began millions of years ago. In living things, microorganisms, plants, etc. are at the forefront of the formation process. The earth was made up of water, air, soil, and many dense green forests. Depending on the availability of air, water, soil, etc., the type of forest is created. The jungle ecosystem was created. By nature, every tree is found to have a purposeful formation. Each plant has a special significance. Each plant has medicinal properties. From time immemorial, our ancestors have used various plants to treat many ailments and cure diseases. Some plants have medicinal properties, while others have toxic elements. Every plant is multifaceted. Useful in many ailments. The leaves, flowers, stems, roots, fruits, bark, etc. of the plant have medicinal properties. I, considering this central concept of the ancestors, studied the effect of the use of certain plants on bacteria and diseases caused by them. To do this, I collected some plants from the Melghat forest and experimented with a bacterium called *E. coli. E coli* Bacteria are the cause of the infection but when the infection becomes severe, it can cause diarrhea, intestinal ulcers, vomiting and can be fatal if not treated in time.

Plants are the richest resource for pharmaceuticals in traditional medicine systems, modern medicines, nutraceuticals, nutritional supplements, traditional medicine, pharmaceutical intermediates and synthetic drug chemistry (1).The use of plants and plant products as medicines can be traced back to the beginning of human civilization. The earliest mentions of medicinal uses of flowers, fruits, roots, leaves, bark, seeds, etc. of plants in Hindu subcultures can be found in *Rigveda*, known to have been written between 4500 and 1600 BC. It is considered the oldest repository of human knowledge. This is Ayurveda, the source of medical research in Hindu culture, providing a special residence for medicine in its eight departments and numerous components of the art of existence and healing (2).The Melghat forest is part of the Amravati region of Maharashtra (India) and preserves many valuable medicinal plants. Knowledge of these medicinal plants has traditionally been passed down from generation to generation without documentation (3).The large area of Melghat in the state of Maharashtra is a hilly area of the Satpura range, covered with very dense forests and occupies an area of about 4000 square meters. km. Melgat's dominant korkus and Gond tribes still rely on the knowledge of local Baidus and Bagat for their primary care. Local doctors rely on the seasonally available native flora to treat human disease and to store available plant material in the form of dry roots, rhizomes, fruits, seeds and more in hilly areas (4).Plant antibacterial compounds can inhibit bacterial growth through mechanisms other than those currently used. The antibacterial properties of medicinal plants are increasingly being reported in many parts of the world (5).Higher plants have been reported as potential sources of novel antimicrobial agents (6).Local information about plants and animals used to maintain health is called ethnopharmacology. Medicinal plants have historically been well-known herbal medicines for the treatment of various diseases (7).The World Health Organization (WHO) reports 20,000 species of plants used for medicinal purposes. The importance of using medicinal plants can be attributed to a number of reasons, including the economics and limited availability of Western medicine, and dependence on herbs as a result of documented positive outcomes for them. Natural products in the form of natural compounds and standardized plant extracts offer countless opportunities for new tablet manufacturers due to the unparalleled availability of chemical diversity in the plant kingdom (8).“According to Suleiman et al. (2010), herbal merchandise and related capsules are used to deal with 87% of all labeled human illnesses along with bacterial infections, most cancers and immunological problems and approximately 25% of authorized capsules withinside the international provoke from plants. Plants have an nearly limitless functionality to synthesize secondary chemical materials which play a key position of their ecophysiology (9)”.They include herbivores, a defense role against pathogen attack, and an attractant role for valuable organisms such as pollinators or symbionts. Therefore, some of the secondary compounds may be useful in the treatment of microbial infections in animals and humans (10).Plants have been favored and empirically used as medicine for centuries, first as traditional preparations, then as pure active ingredients, and this knowledge and accumulated practice has been passed down from generation to generation. It is also true that a quarter of all medical prescriptions are based on substances derived from plants or synthetic analogues of plant origin,

and according to the World Health Organization, 80% of the world's population rely on herbal medicines for their health, according to the World Health Organization (11).

Method and Materials

Plant materials

Chirata, Caesalpinia Bonduc, Morinda citrifolia. Was collected from Melghat Amravati, Maharashtra. The collected plant materials were washed under tap water, dried in shade and then whole plant of *Chirata, Caesalpinia Bonduc, Morinda citrifolia*and stem and leaves of *Chirata, Caesalpinia Bonduc, Morinda citrifolia*homogenized to fine powder and stored in airtight bottles. And convert into Air dried powdered material.

Microorganisms

The microorganisms were obtained from government water testing laboratory daryapur, Amravati. The bacterial strains were grown in the nutrient broth and maintained at room temperature

Nutrient agar slants at 4°C. Antibacterial activity were carried out against Gram negative bacteria such as E. coli.

Glass wares cleaning

All the glass wares were flooded in Potassium dichromate solution (100 g of Potassium dichromate in 1 liter of distilled water followed by slow adding together of 500 mL concentrated Sulfuric acid) for about 12 hrs and rinsed in tap water. Finally, wash in distilled water, dried and used.

Sterilization

The glass wares were sterilized at 180ºC for one hour in hot air oven. All the media were autoclaved at 15 lbs pressure for 15 min. Chemicals All the chemicals and media used in this work were purchased from Himedia, Ranbaxy and Sigma limited and distilled water was used throughout the study.

Preparations

- **Preparation of fine powder**: - First we take Seventen medicinal plant and will dry it and made a fine powder. Leading we take a Seventen medicinal plant. At that point these plant leaf washed with D.W. To discard the undesirable materials at that point air-dried and dry in underneath sunlight. The temperature of sunlight is 42-43℃ for 48 hrs after which we scour or crush this spices. At that point we found a fine powder. At that point we disinfect this powder in warm air oven and store in sterile container.

- **Preparation of antibiotic tablet**: - We use the sterile fine powder of Seventen medicinal plant and distilled water. Make the tablet like structured disc for the antibiotic test.

Procedure

The leaves of the plants collected from the forest were washed clean. They were then sterilized and wiped dry. Prepared a fine powder of all the dried and dried organs in the shade. Now put the prepared powder in an airtight container. All types of powder were packed in different containers. The *E. coli* bacteria were then isolated from the contaminated water in the laboratory, and given a suitable environment, nutrition, etc. Disinfect all glassware in autoclave. Petri plates were sterilized in an autoclave. Disinfected using alcohol each time.

Prepare *E. coli*isolation medium on nutrient agar as per composition and sterilize in autoclave. Allow to cool and pour into a sterilized Petri plate allow to solidify. After solidification for the e coli bacterial culture which was prepared by using nutrient broth.After pouring bacterial culture into a Petri plate leave the Patri plate undisturbed for few minutes and then discard the already port culture from the Petri plate. I placed all the prepared plants powdersdisc for the antibiotic test. In the middle of the plate with the help of powder strip, now all the plates are kept in the incubator for normal temperature. Two days later, 48 hours later, at a temperature of 38 ^{o}C, bacterial growth was observed everywhere in the plate, but a clear circle was formed around the plant powder.

Result and Discussion.

When we examined the interaction of E.coli bacteria and three different plant powders, it was found that the inhibition zone was visible and we measured the diameter of the area where no growth was observed. *Chirata*1.4 cm,*Morinda citrifolia* 1.6 cm, *Caesalpinia Bonduc* 1.8cm inhibition zone, three such observations were obtained, indicating that the plant we took contained some biochemical elements which created an unfavorable environment for bacterial growth and inhibited bacterial growth. Our main goal was to prevent the growth of *E.coli* bacteria, which I succeeded in doing. The implication is that if the *E. coli* bacterium is infected, then using all three of these plants can prevent the growth of *E. coli* bacteria and alternatively protect *E. coli* bacteria from infection. If you use all three of these herbs as fodder for animals, it will naturally help their immune system and protect them from *E. coli* bacteria infection.

Name of plants	Zone observer
Chirata	1.4 cm
Morinda citrifolia	1.6 cm
Caesalpinia Bonduc	1.8cm

Table 1.1 results of given plants

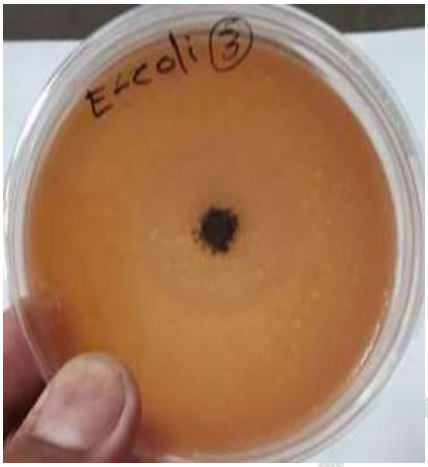

Figure 1.: Chirata

Figure 2.: Morinda Citrifolia

Figure 3 .: Caesalpinia Bonduc

Observation of Effective Medicinal Plants against*E. coli* Bacteria

The antibacterial activities of all the plant extracts against *E. coli* bacteria strains examined were assessed by the presence or absence of inhibition zones and are given in fig.1, fig.2 and fig.3. The global burden of infectious diseases caused by bacterial pathogens poses a serious threat to public health (12). Instead of Antibiotic treatment medicinal plants is preferred choice for treating bacterial infections. However, the emergence of antimicrobial resistance and toxicity problems reduce by using naturally occurring medicinal plants (13, 14). In India, various medicinal plants are grown in natural conditions (15). In the present study, we have investigated the antibacterial activity of three naturally growing plants: *Chirata, Morinda citrifolia, Caesalpinia Bonduc.* The biological activity of these plant powder was tested against*E. coli* bacteria.

Current study results show that medicinal plants powder which mention above have a potential inhibitory effect against*E. coli* bacteria. Comparative observation provide an information all three plats powder shows inhibition against *E.coli* bacteria in minimum and maximum diameter i.e. inhibition zone, the effect of these plants were observer as *Chirata* (1.4 cm), *Morinda citrifolia* (1.6 cm), *Caesalpinia Bonduc* (1.8cm).

A study of zone of inhibition against bacterial strain with these plants powder of *Chirata, Morinda citrifolia*and *Caesalpinia Bonduc*revealed that *E. coli*bacteria showed minimum sensitivity against *Chirata*(1.4 cm),and also showed little bit more sensitivity against *Morinda citrifolia (*1.6 cm),and also showed maximum sensitivity against *Caesalpinia Bonduc*(1.8cm). Plants are less able to inhibit the growth of S. aureus. Abouhosseini Tabari et al. (16), Peppermint essence was susceptible to both gram-negative and positive bacteria (*E. coli* and *S. aureus*, respectively).

Conclusion

In my experimental study finally after the observation I conclude that some plants have the ability to resist the growth of *E. coli* bacteria. Bacterial growth does not occur against three plant which are name as *chirata* (*Swertia*), *Morinda citrifolia* and *Caesalpinia Bonduc*. These three plants arrange according to the zone of inhibition in ascending order share it*Morinda citrifolia* and *Caesalpinia Bonduc*. This three plants shows good effect Morinda citrifolia better and *Caesalpinia Bonduc* shows best among these three that's mean *Caesalpinia Bonduc* is more effective than *Morinda citrifolia*. So we conclude *Caesalpinia Bonduc* used for medicinal purpose against the *E. coli* bacteria.

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