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Review on anti-microbial and anti-fungal poly-herbal gel

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Abstract
Now-a-days fungal infection of skin is one of the most common dermatological problem worldwide. It has been investigated that 40 million people suffer from fungal and microbial infection. In the previous couple of a long term there has been a brilliant boom within side the problem of herbal medicine. In Ayurveda most of drugs were given in the form of powder, kesaya basma. Medicinal plants are used by many ethnic groups as a source of medicine for the treatment of various diagnosis in both humans and domestic animals. These plants produce secondary metabolites that have antimicrobial effects, thus screening of medicinal plants provide another alternative for producing chemical fungicides that are relatively non-toxic and cost-effective. The significant clinical implication of resistance has led to heightened interest in the study of antimicrobial resistance from different antigens. Topical skin infection commonly occur and often present therapeutic challenges to practioners, despite the numerous existing antimicrobial agent available today. The different extract of different parts of plant showed pharmacological activity. In the present study an attempt was made herbal gel containing aloe Vera, neem, and nutmeg.

Keywords: Fungal infection, skin, dermatological problem

Introduction
In developing countries pathogenic micro-organism fungus and bacterial Strains are the main cause of life threatening infection which leads to mortality and in immune -compromised patients. Many antibiotics and antimicrobial agents are available in market which can kill these microbes or inhibit the growth of these Pathogenic micro-organism. The problem is that, these microbes are becoming more resistant. Day by day against these medicine even that many microbes are multidrug resistant. So treat of these disease causing and multi- drug resistant microbes with several antibiotics influence an immense threat on public health. With the kill of pathogens, these medicines can also cause several side effect so there is need of natural, safer and cheaper source of anti-fungal. And anti-bacterial agents. So for control of multidrug resistant microbe and safe use of medicines, people prefer to use natural source as medicine.

Currently microbial infection have become an important clinical threat,with significant associated morbidity and mortiality which is mainly due to the development of microbial resistance to existing antimicrobial agent. Therefore, method for antimicrobial suspectibility testing and discovering novel antimicrobial agent have been extensively used and continue to be developed. The use of antimicrobial agent as highly specific inhibitor has in turn substianlly assisted the investigation of complex biochemical processes. While different forms a forms of antimicrobials have been in use for decade, more customers have become aware of antimicrobial treatment for floor covering in past forty or so years.

Literature Work
Aparjita Verma and Mohan Singh Mehata, 2016 [1]
Silver nanoparticles (AgNPs) were synthesized from an aqueous extract of neem leaves (*Azadirachta indica*) and silver salts. XRD, SEM, FTIR, optical absorption and photoluminescence (PL) were measured and analyzed. The synthesized AgNPs show the weakest energy absorption band at 400 nm. The influence of different parameters, e.g. The concentration of the extract, the pH of the reaction, the ratio of the reactants, the temperature and the time of influence on the synthesis of AgNPs were examined. The formation of AgNPs was found to increase with time at higher temperatures and alkaline pH. The formed AgNPs were found to have enhanced antimicrobial properties and exhibited a zone of

inhibition of isolated bacteria (*Escherichia coli*) from a garden soil sample. Based on the obtained results, it can be concluded that the raw materials obtained fromplants can be effectively used for the production of AgNPs and can be used in various fields such as biomedicine, nanotechnology, etc. (Aparijita Verma)

Muhammad Furqan Khurshid, Muhammad Ayyoob, 2015 [2]

The aim of the present work was to assess an eco-friendly natural antimicrobial textile finish extracted from Aloe gel and Neem plants. Extracted Aloe gel and active substance of Neem were mixed in a mordant to form a finish. Bleached cotton samples were treated with 5, 7, and 10% concentrations of Aloe gel and Neem separately. The same samples were then treated with a hybrid combination of Aloe gel and Neem (HCAN) extracts having 5, 7 and 10% concentrations. These finished samples were subjected to an antibacterial activity test against *E. coli* and *S. aureus*, an antifungal activity test against Aspergillus Niger, and a test of their durability of antibacterial finish fastness to washing by standard test methods. It was found that the hybrid combination of Aloe gel and Neem (HCAN) was an effective antibacterial and antifungal agent as compared to Aloe gel and Neem separately. It also showed good durability to washing.

J.L Rios

In the present paper, we analyze the past, present and future of medicinal plants, both as potential antimicrobial crude drugs as well as a source for natural compounds that act as new anti-infection agents. In the past few decades, the search for new anti-infection agents has occupied many research groups in the field of ethnopharmacology. When we reviewed the number of articles published on the antimicrobial activity of medicinal plants in PubMed during the period between 1966 and 1994, we found 115; however, in the following decade between 1995 and 2004, this number more than doubled to 307. In the studies themselves one finds a wide range of criteria. Many focus on determining the antimicrobial activity of plant extracts found in folk medicine, essential oils or isolated compounds such as alkaloids, flavonoids, sesquiterpene lactones, diterpenes, triterpenes or naphtoquinones, among others. Some of these compounds were isolated or obtained by bio-guided isolation after previously detecting antimicrobial activity on the part of the plant. A second block of studies focuses on the natural flora of a specific region or country; the third relevant group of papers is made up of specific studies of the activity of a plant or principle against a concrete pathological microorganism. Some general considerations must be established for the study of the antimicrobial activity of plant extracts, essential oils and the compounds isolated from them. Of utmost relevance is the definition of common parameters, such as plant material, techniques employed, growth medium and microorganisms tested.

Thakur, V., Prashar

Gels dosage forms are successfully used as drug delivery systems considering their ability to control drug release and to protect medicaments from a hostile environment. Thus, it was desired in this study to formulate Fluconazole into a gel that could be used locally in the treatment of different skin fungal infections. Fluconazole is an imidazole derivative and used for the treatment of local and systemic fungal infection. The oral use of Fluconazole is not much recommended as it has many side effects, thus this formulation is made for better patient compliance and to reduce the dose of drug and to avoid the side effects like liver damage and kidney damage. FT-IR study confirmed the purity of drug. Carbopol 940 LR (synthetic polymer), hydroxy propyl methyl cellulose (HPMC, semi synthetic polymer) and Xanthan gum (natural polymer) were used as the gelling agents. Different penetration enhancers were used to enhance drug penetration from these preparations including oleic acid, propylene glycol and tween 80. Gel formulations were characterized for drug content, pH determination, viscosity measurement, *in vitro* diffusion and skin irritation. Efficient delivery of drug to skin application was found to be highly beneficial in localizing the drug to desired site in the skin and reduced side effects associated with conventional treatment.

Coventry, E., *et al*. 2001 [5]

The antimicrobial effects of extracts of neem seed (*Azadirachta indica* A. Juss.) were investigated using microbial growth inhibition assays. A laboratory-prepared neem seed extract along with a commercially available formulated product, were characterized using HPLC, and shown to be effective against a range of bacteria in an agar diffusion assay. The active ingredient, *i.e.*, the unformulated seed extract of the commercial product, also showed activity and this was further investigated in a bio chromatogram, using the sensitive bacterium *Bacillus mycoides.* Results showed antibacterial activity as three discrete inhibition zones that did not correspond to the R_f of the major neem metabolites, Azadirachta, nimbin and salannin. This suggests that these compounds were not antibacterial. The colony radial growth rates of the fungal pathogens that cause ‘take-all’ and ‘snow mould’ disease were both significantly affected when the commercial, unformulated, neem seed extract was incorporated into the growth medium. Experiments in liquid culture suggested that the effect was fungistatic. Conidial germination of the commercially important obligate pathogen *Sphaerotheca fuliginea* (powdery mildew) was reduced to 11%. The results show that neem seed extracts possess antimicrobial activity with notable effects on some fungal phytopathogens. This Work demonstrates that neem seed extracts have potential for controlling both microbial and insect pests.

Takikawa, A., *et al*. 2002 [6]

We examined the difference between *Escherichia coli* O157 and non-pathogenic *E. coli* in their tolerance to spices. Various spices (5 g each) were homogenized at 25°C for 10 min with 5 ml of 70% ethyl alcohol, and the supernatant solutions obtained by centrifugation were used as spice extracts. When the *E. coli* strains were incubated with each spice extract at concentrations of 0.01% and 0.1%, a noteworthy difference was observed between the O157 and non-pathogenic strains in their tolerance to nutmeg. The populations of the non-pathogenic strains could not be reduced, but those of the O157 strains were remarkably reduced. Antibacterial activity by the nutmeg extract was also found against the enteropathogenic *E. coli* O111, but not against enterotoxigenic (O6 and O148) and

enteroinvasive (O29 and O124) *E. coli*. When we examined the antibacterial effect of volatile oils in nutmeg on the O157 and non-pathogenic *E. coli* strains, all O157 strains tested were found to be more sensitive to β-pinene than non-pathogenic *E. coli* strains.

Cui, H., *et al.* 2015 [7]
The aim of this study is to investigate the antibacterial characteristics and mechanisms of nutmeg oil. In this paper, 54 chemical compositions of nutmeg oil were analyzed by gas chromatography–mass spectrometry (GC–MS). The major volatile components of nutmeg oil were sabinene (39.12%) and alpha-pinene (11.96%). In addition, nutmeg oil showed significant antibacterial activity, minimum inhibitory concentration, and minimum bactericide concentration of seven pathogens are 0.05 and 0.1%, respectively, and the nutmeg oil also had a significant effect on inhibiting the growth of *Escherichia coli* and *Staphylococcus aureus* in phosphate buffer saline and pork. Subsequently, in order to reveal the possible antibacterial mechanisms of nutmeg oil against pathogens, the damage of cell membrane was observed by scanning electron microscopy, the loss of 260 nm absorbing material was tested by ultraviolet spectrophotometer, and the cellular adenosine triphosphate concentrations were measured by the Surface Hygiene Test Kit. Finally, the decrease of nucleic acid was evaluated by inverted fluorescence microscope. These results indicated that the antibacterial mechanisms of the nutmeg oil against bacteria might be interpreted as disrupting cell membrane and inhibiting synthesis of DNA.

Kopperundevi, R., 2017 [8]
The phytochemical constant were carried out for the plants powder and extracts of Lagenaria siceraria, Trichosanthis cucumarina, Tridax procumbens to bring the quality and purity of the valuable medicinal plants Preliminary phytochemical screening were carried out for all the plants and its extracts to determine the presence of active principle in plants Fluorescence analysis was carried out to detect the presence of chromophore present in the powder and extracts. No fluorescence was observed for powder as well as extracts Selected plants powder were extracted with ethanol to bring all the active principle Qualitative estimation of total flavonoid contend and total Phenolic content were determined by spectrophotometrically all the extract showed significant amount of flavonoid and phenolic compounds. Development and Standardization of formulation: Poly herbal gel was prepared with water soluble polymer Carbopol, propylene glycol 400, povidone, triethanolamine to bring a good absorption capacity of the plant extracts on scalp. The standardization parameters of the gel are viscosity, pH, Homogeneity, Spreadability, content uniformity, skin irritation test all were carried out to bring a quality, purity and safety of the prepared gel formulation. Clinical evaluation of hair growth activity: The prepared poly herbal formulation was taken for the determination of hair growth activity of the selected plants The clinical evaluation of prepared gel was carried on the human volunteers and compared with the reference who applied gel without the extract. The growth of hair measured by trichoscope and the growth was completely observed after the 90 days Hence, from these studies it is concluded that the prepared poly herbal gel containing Lagenaria siceraria, Trichosanthis cucumarina, Tridax procumbens proved hair growth activity.

Vázquez, B., *et al.* 1996 [9]
The aqueous and chloroform extracts decreased the edema induced in the hind-paw and the number of neutrophils migrating into the peritoneal cavity, whereas the ethanol extract only decreased the number of neutrophils. The antiinflammatory agent's indomethacin and dexamethasone also decreased carrageenan-induced edema and neutrophil migration. The aqueous extract inhibited prostaglandin E_2 production from [^{14}C] arachidonic acid. The chemical tests performed in the aqueous extract for anthraglycosides, reductor sugars and cardiotonic glycosides were positive. In the ethanol extract, the chemical tests performed for saponins, carbohydrates naftoquinones, sterols, triterpenoids and anthraquinones were also positive. In the chloroform extract, the chemical tests performed for sterols type Δ^5, and anthraquinones were positive. These results demonstrated that the extracts of *Aloe vera* gel have antiinflammatory activity and suggested its inhibitory action on the arachidonic acid pathway via cyclooxygenase.

Emmanuel, S., *et al.*, 2006 [10]
The antiinflammatory effect of solasodine (50 mg/kg p.o.), of a purified component named sobatum (50 mg/kg p.o.) and of methanol extract of *Solanum trilobatum* (100 mg/kg p.o.) was evaluated. All the tested articles showed significant antiinflammatory activity.

Finlay, J., *et al.* 2003 [11]
Clavulanate is a broad-spectrum β-lactamase inhibitor, with activity against many of the chromosomally and plasmid-mediated β-lactamases of both Gram-positive and Gram-negative bacteria. Although clavulanate has minimal antibacterial activity *in vitro*, accumulating evidence suggests that it may have an effect on pathogenic bacteria regardless of β-lactamase production. Like other β-lactams, clavulanate has been shown to bind to penicillin-binding proteins (PBPs) in Gram-positive and Gram-negative bacteria. It was found to bind selectively to PBP3 in Streptococcus pneumoniae. It has been suggested that complementary binding to different PBPs and subsequent effects on autolysis contribute to the enhancement of the activity of other β-lactams by clavulanate. In addition, co-amoxiclav has been shown to enhance the intracellular killing functions of human polymorphonuclear cells (PMNs) in studies undertaken with β-lactamase-producing and non-β-lactamase-producing strains of bacteria. These data from *in vitro* and cell culture systems have been reflected *in vivo*, where clavulanate enhanced the activity of amoxicillin against non-β-lactamase-producing organisms. Further studies are required to determine whether the effects seen within *in vitro* and *in vivo* animal studies have clinical significance.

Vaou, N *et al.*, 2021 [12]
The increasing incidence of drug- resistant pathogens raises an urgent need to identify and isolate new bioactive compounds from medicinal plants using standardized modern analytical procedures. Medicinal plant-derived compounds could provide novel straightforward approaches against pathogenic bacteria. This review explores the antimicrobial activity of plant-derived components, their possible mechanisms of action, as well as their chemical

potential. The focus is put on the current challenges and future perspectives surrounding medicinal plants antimicrobial activity. There are some inherent challenges regarding medicinal plant extracts and their antimicrobial efficacy. Appropriate and optimized extraction methodology plant species dependent leads to upgrade and selective extracted compounds. Antimicrobial susceptibility tests for the determination of the antimicrobial activity of plant extracts may show variations in obtained results. Moreover, there are several difficulties and problems that need to be overcome for the development of new antimicrobials from plant extracts, while efforts have been made to enhance the antimicrobial activity of chemical compounds. Research on the mechanisms of action, interplay with other substances, and the pharmacokinetic and/or pharmacodynamic profile of the medicinal plant extracts should be given high priority to characterize them as potential antimicrobial agents

Muñoz-Bonilla, A. *et al.* 2012 [13]

This article describes the state of the art in the field of antimicrobial polymeric systems during the last decade. Keeping in mind the multitude of existing systems, a classification of the different materials is carried out dividing basically those synthetic polymers that: (a) exhibit antimicrobial activity by themselves; (b) those whose biocidal activity is conferred through their chemical modification; (c) those that incorporate antimicrobial organic compounds with either low or high molecular weight; and (d) those that involve the addition of active inorganic systems. This classification is not absolutely unique and in occasions some described polymeric systems could belong to more than one section. However, the purpose of this review is to provide a handy overall vision of the antimicrobial synthetic polymers world.

Brown, D.F *et al.* 1991 [14]

The 'E test' is a method for measuring MICs of antimicrobial agents against bacteria and is based on diffusion of a pre-formed antibiotic gradient from a plastic strip. The performance of the E test was evaluated by comparison with a conventional agar dilution MIC method in tests. With ten agents and a variety of organisms. Correlation between MICS by the agar dilution and E test methods was good, 98.85% results were within 2 log, dilution steps in a total of 1304 tests. The E test is technically straightforward as tests are set up in the same way as the disc diffusion method. The versatility and ease of use of the E test make the method an attractive alternative to conventional dilution tests.

Historical Development

Since ancient times, medical plants and simpler herbal remedies have been used in all parts of the world for the treatment and alleviation of various ailments. Although the use of medicinal plants is as old as mankind itself, their controlled application, the isolation and characterization of active substances, started only in the early nineteenth century. It is a known fact that the extractive plant isolates and isolated active substances played a major role in the development of modern pharmacotherapy. Many of the isolated compounds are still used today, or they have served as a model for the synthesis of a large number of drugs.

The use of plants as medicines has a long history in the treatment of various diseases. Plants especially those with ethnopharmacological uses have been the primary sources of medicine for early drug discovery. Herbal remedies, from simple to complex forms, should be made of the raw materials required for quality, because only then they could be safe and effective for use.

Objective

All Herbal plants show different activity which are helpful to prevent from many disese which can cure it in many ways.

Antimicrobial activity refers to the process of killing or inhibiting the disease-causing microbes. Various antimicrobial agents are used for this purpose. Antimicrobial may be anti-bacterial, anti- fungal or antiviral.

Antimicrobial agents are not like other drugs. They are unique in that both the individual patient and the broader society bear the consequences of their use with each prescription.

Polyherbel formulation is use of more than one herb in a medicinal preparation. It is prepared by combining of several medicinal herb usually known as polyherbalism.

Herbal drugs have long era of use and better patient compliance. Herbal formulation are cheap as compared to the synthetic gel. Management within the ranges of risk.

Medicinal plants contain numerous biologically active compounds which are helpful in improving the life and treatment of disease. Compounds such as carbohydrates, proteins, enzymes, fats, oils, terpenoids, flavonoids, sterols simple phenolic compounds etc.

The significant clinical implication of resistance has led to heightened interest in the study of antimicrobial resistance from different antigens. Topical skin infection commonly occur and often present therapeutic challenges to practioners, despite the numerous existing antimicrobial agent available

Anti-Microbial Activity

Antimicrobial activity refers to the process of killing or inhibiting the disease-causing microbes. Various antimicrobial agents are used for this purpose. Antimicrobial may be anti-bacterial, anti- fungal or antiviral. They all have different modes of action by which they act to suppress the infection. Anti-microbial suspectibility testing can be used for drug discovery, epidermiology and prediction of thereptic outcome. In these review we focused on the used of antimicrobial activity of neem, aloevera and nutmeg. Antimicrobial agents are not like other drugs. They are unique in that both the individual patient and the broader society bear the consequences of their use with each prescription. The antimicrobial effect that saves lives also exerts selective pressure on replicating bacteria, leading to the emergence of drug resistance.

Table 1: List of drugs

Sr. No	Benefits	Figure
1.	Anti-inflammatory, antibacterial, antioxidant, immune-boosting, and hypoglycemic properties	
2.	Anti-inflammatroy, Anti-hyperglycemic, anti-ulcer, Anti-malarial, Anti-fungal, anti-microbial, Antiviral	
3.	Anti-oxidant, Anti-Fungal, Anti-bacterial, Anti-microbial	

Fig 1: Aloe vera

Biological name: Aloe barbadensis miller

Family: Asphodelaceae

Chemical constituent: H_2O, amino acid, vitamins, lipids, sterols, tannins, enzymes and also contain phenol saponin and anthraquinone.

The word aloe vera is derived from an Arabic word alloeh – shining bitter source, and Vera –true. Aloe vera is a stem less plant belonging to other family liliaceace. It is almost found throughout the globe but it grows best in the hot topical environment. It has high water contain which range from 99.0-99.5% because it has high capacity for holding of water as it use for keep moisture skin. Aloe Vera is stated to incorporate mono and polysaccharide, tannins, sterols, natural acid, enzymes, saponins, nutrition and minerals.
Aloe vera is a well-known medicinal plant used in many therapeutic purposes. Naturally it is composed of many useful compounds that have ability to use for treatment of many diseases. The active compounds advised in this plant are saponins, sugar, enzymes, vitamins, aloesin, aloeemodin, aloin, acemannan aloemannan, aloeride, methylchromones, flavonoids, naftoquinones, sterols, minerals, anthraquinones, Aloe vera is made up of many complex ingredients including polysaccharides, glycoproteins, phenolic compounds, salicylic acid, lignin, hormones, amino acids, vitamins, saponins, and enzymes, which give aloe vera its many beneficial properties including antiinflammatory, antibacterial, antioxidant, immune-boosting, and hypoglycemic properties
Traditionally aloe vera has been used in ointment and ceam to assist the healing of wound, burns, ecezema and psoriasis. The plant consist of two part outer covering and parenchyma aloe gel which it is almost colourless and present inside the outer covering. Based on *in-vivo* and *in-vitro* study these two parts shows medicinal properties. Total extract of the plant shows medicinal properties total extract of plant shows antibacterial, antifungal anti-inflammatory and anti-arrthritic properties. (Maragathavalli S *et al.*, 2012) [15].

Fig 2: Neem

Biological name: *Azadirachta indica*.

Family: Meliaceae.

Chemical constituent: Nimboidin, nimbin, nimbidin sodium nimbinae and quercetin
Uses-Anti-inflammatroy, Anti-hyperglycemic, anti-ulcer, Anti- malarial, Anti-fungal, anti-microbial, Antiviral Neem is used withinside the conventional remedy as a supply of many healing sellers withinside the Indian subculture and grows properly withinside the tropical countries. Earlier studies on neem have showed that it contains active substances with multiple medicinal properties. Neem (*Azadirachta indica*) is a member of the Meliaceae own circle of relatives and its function as health-selling impact is attributed due to the fact its miles wealthy supply of antioxidant. It has been extensively utilized in Chinese, Ayurvedic, and Unani drugs international in particular in Indian Subcontinent withinside the remedy and prevention of numerous diseases. Earlier locating showed that neem and its materials play position withinside the scavenging of unfastened radical technology and prevention of ailment pathogenesis. Neem leaves has a good therapeutic potential as anti-bacterial agent. It shows various therapeutic properties like anti-bacterial, anti-oxidant, anti-microbial skin disorder and wound healing activity. The most important active constitutent in Azardichta indica in Azadirachtin and other nimbin, nimbolinin, nimbandiol, sodium nimbinate, gedunin, salanin etc. Quercetin and beta sitosterol, polyphenyl flavoinods were purified from neem fresh leaves and were known to have anti-bacterial and anti-fungal properties. (Mosaddek AS *et al.*,2008) [16].

Fig 3: Nutmeg

Biological name: *Myristica fragrans*.

Family: Myristiraceae.

Chemical constituent: Sabiene, trepenol, myristicene, eugenol and safrol.

Uses: Anti-oxidant, Anti-Fungal, Anti-bacterial, Anti-microbial.
Nutmeg shows antifungal and anti-micobial activity. The excellence anti-microbial properties shown by nutmeg seeds could be due to compound such as carvacron, β-caryophylline, p-cymene, pinen present in the nutmeg seeds. The antioxidant, antimicrobial and significant frightened device results of nutmeg have additionally been suggested in literature. Nutmeg is a rich source of fixed and essential oil, triterpenes, and various types of phenolic compounds. Many of the secondary metabolites of nutmeg showcase organic sports which could aid its use in conventional medicine. Nutmeg seeds shows strong anti-microbial activity against gram positive and gram negative bacteria as well as various pathogenic fungi. Anti-microbial activity is contributed by β- caryophylline and alpha pinene and β-pinene, p-cymene and carvacrol. (Gediya SK *et al.*, 2011) [17].

Fig 4: Advantages (Herbal gel)

Methodology
Extraction process for Aloe vera
1. Cold Extracted Gel (CEG).
2. Hot Extracted Gel (HEG).

Extraction process for Neem
1. Hot Continuous Extraction (Soxhlet) (Handa, S.S., *et al.*, 2008) [18].
2. Immersion technique.
3. Aqueous extraction.

Extraction process for Nutmeg
Maceration (Handa, S.S., *et al.*, 2008) [18].

Current work
Polyherbel formulation is use of more than one herb in a medicinal preparation. It is prepared by combining of several medicinal herb usually known as polyherbalism. In the current situation Polyherbel formulations are more essential because it enhance the therapeutic action and reduces the concentration of the single herbs, thereby reducing adverse event. (Digrak M *et al.*, 2002) [20]
The herb are formulated in different modern dosage forms such as tablet, capsule, gel, topical cream, ointment and even some novel drug delivery forms like sustained release and microcapsule dosage forms. Herbal medicine are more acceptable in the view that they are safe with fewer side effect than the synthetic ones. Herbal formulations are demanded in the market. The present work deals with the development of novel polyherbal gel use for fungal and microbial infection. It contains neem leaves extract nutmeg and aloe vera extract the plant have been reported in the literature having antifungal anti-microbial activity. (Newall CA *et al.*, 1996) [21].

Challenges
Herbal formulation have reached widespread acceptability

as a therapeutic agents like anti-fungal, anti-inflammatory, anti-microbial, anti-aging etc. It is helpful to our body it shows the maximum therapeutic effect as compared to the synthetic formulation. It contains an active substance and herbal substance or herbal preparation or herbal substance in combination with one or more herbal preparation. (Abu-Shanab B *et al.*, 2006) [22].

A key challenges is to objectively assess conflicting, toxicological, epidemiological and other data and the verification of herbal material used.

- They are less toxic.
- They does not irritate the skin.
- Herbal drugs have long era of use and better patient compliance.
- Herbal formulation are cheap as compared to the synthetic gel.
- Management within the ranges of risk.
- Communication of uncertainty
- Pharmacological, toxicological and clinical documentation.

Discussion

Use of plants as source of medicine has been inherited and is an important component of the health care system in India. In these systems of Indian medicine, most practitioners formulate and dispense their own recipes; hence this requires proper documentation and research. Herbal medication has end up an object of world significance each medicinal and economical. The components of the flora used for medicinal functions are the leaves, root, stem, fruits, entire aerial components, the entire plant and flowers. The plant is mentioned to include antioxidant houses in its methanolic leaf extract anti-inflammatory interest, anti-diabetic interest and antibacterial interest. Medicinal plants contain numerous biologically active compounds which are helpful in improving the life and treatment of disease. Compounds such as carbohydrates, proteins, enzymes, fats, oils, terpenoids, flavonoids, sterols simple phenolic compounds etc. Natural products are the source of synthetic and traditional herbal medicine and are still the primary health care system. The presence of various life sustaining constituents in plants made scientists to investigate these plants for their uses in treating certain infective diseases and management of chronic wounds.

Although usage of these herbal medicine has increased their quality, their safety and efficiency. The increased use of antimicrobial and antifungal agents in recent years has resulted in the development of resistance to these drugs. Medicinal plant life are utilized by many ethnic organizations as a supply of medication for the remedy of diverse illnesses in each human beings and home animals. These vegetation produce secondary metabolites that have antimicrobial properties, as an end result screening of medicinal. The significant clinical implication of resistance has led to heightened interest in the study of antimicrobial resistance from different antigens. Topical skin infection commonly occur and often present therapeutic challenges to practioners, despite the numerous existing antimicrobial agent available today. Necessity for developing antimicrobial and antifungal has increased significantly due to growing concerns regarding multi drug resistance bacteria. The increasing prevalence of microbial implant failure has spurred the development of new material having antimicrobial activity. Gels are class of material used in diverse medical application such drug delivery, wound fillers and as an implant coating, to develop selectively active antimicrobial activity.

Conclusion

The essential oil and different extracts of aromatic plants have shown strong antimicrobial activity against variety of fungi as well as bacteria. Herbs are the oldest form of primary healthcare which were used by all cultures throughout history. They were an integral part of the development of modern civilization. Frequency of intake the allopathic drugs for to produce adverse side effects. Recently, herbal remedies are considered as safe as the synthetic one and herbal formulations are having growing demand in the global market. Selection of the plants with desired concentration is important to produce the desired therapeutic effect.

Considering consumers' safety, there have been continuous efforts by scientists to introduce complementary antimicrobial agents and achieve partial use of chemical preservatives and antibiotics. Chemicals are known to have a number of detrimental effects like liver damage, kidney failure, skin allergies, discoloration of teeth, and development of multidrug-resistant pathogens. Some bacteria that show resistance to conventional antibiotics are found susceptible to essential oils and extracts of spices, condiments, and other herbal products.

There is a continuous and urgent need to discover new antimicrobial compounds with diverse chemical structures and novel mechanism of action due to an alarming increase in the influence of new and reemerging infectious diseases and development of resistance to the antibiotics in current clinical use [3].

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