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Short Communication

Phytochemical investigation of some Indian medicinal plants and anti bactirial activity

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Abstract

Since the dawn of human creation and appearance of omnipotence wonderful creation "Adam" and "Eve" on this planet, they were plagued with diseases, decay and death, which threatened his existence. Naturally our ancestor depended on flora surrounding us, and so made an elaborate study of planet. As such the medicinal importance of plants have been recognized since then compound having importance therapeutic values with a view of ameliorate human sufferings. Systematic physiochemical analysis of drug, used in indigenous medicine was taken up on modern scientific lines about fifty years ago and a large number of importance medicinal plants prescribed by Kavirajs and Hakims have been investigated. Similarly a number of plants are being utilized for the preparations of anti fertility and anti-cancer drugs and in a country like India, where population control is must, such type of drugs derived from plants materials will play a significant role in the socio-economic problem of the country. Vigorous researches have therefore, to be carried out plant sources which can be used as anti-cancer drugs. A survey carried out by Gujarat state in 1990 has revealed the presence of about eleven hundred efficacious drugs of which about five hundred are newly discovered.

Keywords:

Introduction

Boswella serrata is a medium-sized tree that is found in the mountainous areas of MP (central India). The popular name of Boswella serrata are Indian Frankincense plant, Indian OLibranium, salai Guggal in sanskrit. The ancient time herbs Indian Frankincense have antiinflammotory character and the gum resin of Boswella serrats. There are various active constituents in the gum resins of Boswella serrata[1]. It contains the fatty acid. It also contains the sugar Glucose, arabinose, raminose, galactose, fructose, glucoronic acid. The gum resis contain triterpene alcohol, serratol, and triterpenoids. The volatile oil contains p-cymene, d-limonene, terpenolene, bornyl acetates abd methylacids commonly known as Boswellic acids.

Review of literature: Bacterial resistance is a growing-problem worldwide one the measure to overcome the growth of resistance is to have continuous research of new secure and powerful antimicrobial as alternate to substitute with non effective and secure ones.

In last fifteen years, the speed of development of anti bacterial drugs has reduced, whereas the power of resistance (exclusly multiple) has increased exponetially.

Literature report and botanical records (ethno) suggested that plants are the sleeping icons of pharmaceutical industry and is natural resource of antibacterial drugs that give useful compounds that can be applied in some infections universally.

Singh *et al.* reported that the Bas elicited significant anti-inflammatory and anti arthritic activity in rat and mouse model of paw and inflammation[1]. The results of the study revealed that the effect observed through this route is in accordance to the study conducted with the systematic route, thus establishing that Bas when used through topical application is as effective as through the systemic route.

Singh *et al.* has reported the synergistic effect of Bas and glucosamine for anti-inflammatory and anti-arthritic activities in rats[2]. Two studies were conducted, that is acute anti-inflammatory by carrageen an edema and chronic anti-arthritic by Mycobacterium-induced developing arthrists. They had concluded that synergistic effect was observed in chronic inflammatory condition when two chemical entities were administered in combination in preclinical study.

Gupta *et al.* Indian researchers evaluated a formula containing *Boswellia serrata, Withania somnifera, Curcuma longa* and zinc complex in a study of patients with osteoarthritis[3]. They found that treatment with this formula produced a significant drop in severity of pain and disability score. However, they also observed side effects during the treatments.

Ammon *et al.*[4] state that ethanolic extracts of the gum resin exudates of Boswellia serrata in rat peritoneal neutrophils.

Safayhi *et al.*[5] isolated isomers of boswellic acid (BAs), 11-keto-beta-boswellic acid acetyl derivatives decreased the formation of leukotriene B4 in rat peritoneal neutrophils.

According to Gupta *et al.*[6] the gum resin of *Boswellic serrata,* known as Indian Ayurvedic system of medicine as salai guggal, contains boswellic acids, which have been shown to inhibit leukotriene biosynthesis.

C. F. Krieglstein *et al.*[7] isolated Acetyl-11-Keto-betaboswellic acid, a constituent of a herbal medicine from boswellia serrata resin, attenuates experimental ileitis.

M. Babita *et al.*[8] isolated two triterpenoids from *Boswellia serrata* gum resin.

R.S. Pandey *et al.*[9] reported that alcoholic Extract of oleo-gum resins of Boswellia serrata L. inhibits lipo-polysaccharide induced nitric oxide production in rat may be presence of acetyl –α- Boswellia acid.

Objective: The growing exponentially number of microbe that are generating resistance to old antibiotic 9”26”29” generate interest on plants antibacterial compound in anticipation that, they may supply useful leads into antiinfective drugs.

Established medical practice has been known for centuries in many counters of the world. It has been, observed that these practices vary from country to country. Traditional medicine practitioners use numerous plants herbs all over the world.

In Microbial diseases the plants functions as anti-microbial activity against the causative agents. Effort in pursuance to search for drugs from plants and testing of the scientific basis of some known practices drugs.

The basic objective of this work is to highlight the significance of herbal extract for medicinal uses by performing variety of experiments.

Methodology

Usual method of isolated distillation, fractional etc. (extraction with solvents) along with modern chromatographic techniques (paper, thin-layer, column, G.L.C.) will be employed for the isolated and purification of the physiologically active compounds. Various chemical degradations (oxidations reduction, Alkylation’s, epoxidation) compiled with estimation of functional group in addition to modern spectroscopic techniques[5]

Collecting of plants: Fresh plants parts including bark and gum resins of salai (Boswellia serrata) and Berries and flower buds of Mesua Ferrea Linn. Will be collected from authentic source and evaluated for their antimicrobial activity against 10 bacteria (five gram positive and five gram negative and fungi).

Sampling technique: Sampling will be done under suitable condition as per description available in authentic literature.

Preparation of plants extracts: An extract is a phytochemical mixture from plants, which is prepared by extraction of particular part of the plant. Solvent, butanol will be used for the phytochemical taking out of a variety of plants parts). Extract thus obtained will be right away evaluated for antibacterial using” Agar well diffusion method” and antifungal activities.

Biological Activity: Microorganisms used: A total of 5 gram negative, 5 gram positive and fungi organisms will be used in this study[6] (salmonella Sps., E. coli/Proteus mirabilis, pseudomonas Sps., Bacillus subtilis, lactobacillus Sps. and staphylococcus aureus, aspergillus Sps., Candida sps., yeast.).

Cup-plate Agar well diffusion method: The antibacterial activity of butanolic extract of specific part of the plants against 10 bacteria and 5 fungi will, be calculated by taking “agar well diffusion method”

Minimum inhibitory concentration (M.L.C.L.) determination: MIC of the butanolic extract of specific parts of the plants parts will be determined by the Broth dilution method.

Results and discussion

The use of plant Boswellia serrata root extract with known antimicrobial can be great significance in therapeutic treatments but several studies have also reported various type of contamination of herbal medicines which include microorganisms and toxins produced by microorganisms, pesticides and toxic heavy metals[11]. As a result, sterilization is needed especially for aqueous extract before use to get rid of these contaminations. In present study aqueous extract were autoclave-sterlized before use as autoclaving is reported to cause less damage to the antibacterial activities of the aqueous extract[12].

Adverse effect of Boswellia serrata were minor and were judged as not casually related to the treatment and not markedly different from those noted in the placebo groups Diarrhoea, abdominal pain, and nausea were reported in maore one study.

Discussion: Collectively, these data seem to indicate that Boswellia serrata extract are effectively in treating a range of conditions caused or maintained by inflammatory processes. The result of non-randomised studies a trial of herbal mixture containing boswellia serrata, which failed to meet the inclusion criteria for this systematic review trend to points in the same direction. Boswellia serrata has been used traditionally against

inflammatory diseases. Its main pharmacologically active ingredients are Apha and Beeta Boswellic acid, as well as other pentacyclic triterpenic acids. These compounds have been show to inhibit pro-inflammatory processes by their effect on 5-lipoxygenase and cyclo-oxygenase and on the complements system.

The evidence evaluated here may be encouraging, but it is not convincing. Not enough large randomized clinical trials have been published for any condition. The medications used in these trials cannot be directly compared in terms of contents and strength. The pharmacokinetics and optimal dose of Boswellia serrata extract are largely unknown usually 600-300mg gum resin per day or equivalents is recommended for oral intake. Source of funding or sponsorship was undisclosed in all but one trial.

Conclusion

Our study suggests that Boswellia serrata extract may be a medically useful and safe treatment modality for patients. However, we strongly recommend to further investigating BSE in large clinical randomized trial before definite conclusions can be drawn.

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