

PREPARATION OF HERBAL MOUTHWASH USING *A.INDICUM*

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Abstract: Herbal medicines play an important role in primary health care in many developing countries. It is estimated that there are more than 45,000 species of medicinal plant present in our country. One such medicinal plant is *Abutilon indicum*. It is erect, woody and shrubby plant found commonly in tropical regions. The whole plant is used as curative for many diseases. The present study aims to isolate dental pathogens from clinical samples and to prepare herbal mouthwash using the leaves of *Abutilon indicum*. This study also determines the effect of herbal mouthwash on dental pathogens by Agar well diffusion method and disc diffusion method. The pathogens such as *Streptococcus mutants*, *Lactobacillus sp* and *Peptostreptococcus sp* were successfully isolated. The herbal mouthwash inhibited *Streptococcus mutants* followed by *Peptostreptococcus sp*, and *Lactobacillus sp* on both methods. The results suggested that the plant *Abutilon indicum* has predominant effect over dental pathogens and can be used as mouthwash for dental caries.

Key words: *Abutilon indicum*, herbal mouthwash, agar well diffusion method, disc diffusion method, dental pathogens.

I. INTRODUCTION

Medicinal plants are the gift to human beings to lead a disease free healthy life (Archana sharma, *et. al.*, 2013). They play a significant role in maintaining our human health. Plant medicines are used worldwide in the traditional treatment for many diseases (Vyas, *et. al.*, 2011). The medicinal plants are useful for healing as well as for curing human diseases due to the presence of the phyto constituents (Vijaya Packirisamy, *et. al.*, 2014).

Plant based medicines are used to cure many diseases since ancient times (Ankit saini, *et. al.*, 2014). They have always been used as a rich source of biologically active drugs and have numerous traditional uses to serve mankind for many thousand years (Gupta, 2010). Traditional medicines derived from medicinal plants are used by about 60% of the world's population (Vaidya, 1997).

Abutilon indicum belonging to Malvaceae family is a perennial erect shrub distributed throughout the tropical regions (Archana Sharma, *et. al.*, 2013). It is commonly known as "Thuthi" in Tamil and "Country Mallow" in English (Saini, *et. al.*, 2015). It is an herbaceous weed used as medicinal plant since ancient times. The whole plant and different parts of the plant are used to cure many human ailments. The leaves of this plant are used to cure ulcer, Inflammation, Rheumatism, Syphilis of penis, Piles and to relieve leg pains, Inflammation of bladder, Catarrhal bilious diarrhoea, Bronchitis, Gonorrhoea, Fevers (Saini, *et. al.*, 2015).. It is used as antidote for the treatment of snake bites (Gautam Girendra kumar and Vidyasagar Gali, 2011). The decoction of the leaves are used for toothache, tender gums (Prakshanth, *et. al.*, 2006) bilious diarrhoea, and ear ache and also used as eye wash and mouth wash (Khadabadi and Bhajipali, 2010).

The present study aims to determine the antibacterial activity of herbal mouthwash prepared from *Abutilon indicum* against dental pathogens isolated from clinical samples.

II. MATERIALS AND METHODS

2.1 Collection of Plant:

The plant sample was collected from Tiruchirapalli, Tamilnadu, India. The leaves of *Abutilon indicum* were collected and washed thoroughly with distilled water to remove the dust particles. Then the leaves were shade dried and coarsely powdered using mechanical grinder.

2.2 Preparation of herbal syrup:

10 g of powdered sample was added to 50 ml of water and boiled to 80°C. Then, 3 cloves, few mint leaves, and 5ml of gingelly oil were added to the solution and boiled until it gets reduced to one fold. The solution is filtered using clean muslin cloth and cooled. The herbal mouthwash was ready for further use.

2.3 Collection of clinical samples:

Samples were collected from the mouth of infected persons by using sterile cotton swabs. Then the swabs were immediately immersed into saline.

2.4 Isolation and Identification of pathogenic bacteria:

Swab samples were used to isolate the bacteria. The samples were collected aseptically and then streaked on Nutrient agar, Mannitol salt agar, Cetrimide agar medium, EMB agar medium. The isolated organisms were identified by Gram staining.

2.5 Antimicrobial activity using Agarwell diffusion method:

20 ml of sterile Muller Hinton agar was poured over sterile petriplates and allowed to set. Plates were then seeded with 24 hrs old bacterial culture using sterile swabs. For agar well diffusion method, wells were made on the plate by using cork borer. Extracts were added to the well in the concentration of 10µl, 20µl, 30µl respectively. The plates were allowed to dry for 10 minutes for the diffusion of extracts into the agar. Then the plates were incubated at 37°C for 24 hrs. After 24 hrs, the plates were examined for zone of inhibition (Murray, *et. al.*, 1995).

2.6 Antimicrobial activity using disc diffusion method:

Sterile Muller Hinton agar plates were prepared as agar well diffusion method. Sterile filter paper discs impregnated with mouthwash of concentrations 10µl, 20µl, 30µl were placed over the agar plates. The plates were allowed to dry for 10 minutes for the diffusion of extracts into the agar. Then the plates were incubated at 37°C for 24 hrs. After 24 hrs, the zones were examined and measured in millimeters (Murray, *et. al.*, 1995).

III. RESULTS AND DISCUSSION

Pathogens such as *Streptococcus mutants*, *Peptostreptococcus sp*, *Lactobacillus sp* were isolated from clinical samples. The herbal mouthwash prepared from the leaves of *Abutilon indicum* is pale green in colour and in liquid consistency. This herbal mouthwash possesses antibacterial activity and shows effective result against dental pathogens. The results obtained by Agar well diffusion method are summarized in table 1. The results obtained by disc diffusion method are summarized in Table 2. The size of the zone increases as the concentration increases. The antimicrobial activity is mainly due to the presence of terpenes which can cause disruption of cell membranes (Urzua, *et. al.*, 1998). The antimicrobials prepared from plants are more effective than synthetic antimicrobials (Iwu, *et. al.*, 1999). The maximum zone of inhibition is seen in *Streptococcus mutants* (18mm). The minimum inhibitory effect is on *Lactobacillus sp* (10mm) as it is a normal flora. Thus, it is clear that the formulated herbal mouthwash is effective against dental pathogens.

Table 1. Results of zone of inhibition using herbal mouthwash by agar well diffusion method.

PATHOGENS	10µl	20µl	30µl
<i>Streptococcus mutants</i>	10mm	13mm	18mm
<i>Peptostreptococcus sp</i>	7mm	9mm	12mm
<i>Lactobacillus sp</i>	2mm	5mm	10mm

Table 2. Results of zone of inhibition using herbal mouthwash by disc diffusion method.

PATHOGENS	10µl	20µl	30µl
<i>Streptococcus mutants</i>	8mm	10mm	15mm
<i>Peptostreptococcus sp</i>	5mm	7mm	10mm
<i>Lactobacillus sp</i>	2mm	4mm	8mm

IV. CONCLUSION

In this study, the antibacterial activity of *Abutilon indicum* has been investigated. The formulated herbal mouthwash shows more effect on *Streptococcus mutants* and it can be used as mouthwash for dental caries. This study proves that leaves of *Abutilon indicum* are capable of treating dental problems. Further pharmacological and Pharmacognosical investigations are being carried out to identify its medicinal profile in the field of medicine.

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