INTRODUCTION:
Bacteria and fungi are accountable for many infectious diseases. The increasing clinical implications of drug resistant fungal and bacterial pathogens have lent additional importance to antimicrobial drug research. Worldwide, infectious disease is one of the main causes of death accounting for approximately one-half of all deaths in tropical countries. Perhaps it is not surprising to see these statistics in developing nations, but what may be remarkable is that infectious disease mortality rates are actually increasing in developed countries, such as the United States. Death from infectious disease, ranked 5th in 1981, has become the 3rd leading cause of death in 1992, an increase of 58%.
It is estimated that infectious disease is the underlying cause of death in 8% of the deaths occurring in the US. Plants are the natural reservoir of many antimicrobial agents. In recent times, traditional medicine as an alternative form of health care and to overcome microbial resistance has led the researchers to investigate the antimicrobial activity of medicinal plants. The antimicrobial screening which is the first stage of antimicrobial drug research is performed to ascertain the susceptibility of various fungi and bacteria to any agent. This test measures the ability of each test sample to inhibit the in vitro fungal and bacterial growth. This ability may be estimated by any of the following three methods.

MATERIALS AND METHODS:
Selection of medicinal plants:
In the present effort a few selected medicinal plants were screened for possible antibacterial activity. Psidium guajava, Sansevieria roxburghiana, Adhatoda vasica, Terminalia arjuna.
*arjuna*, shown in Figure 1 to 4 respectively. These are as follows:

**Psidium guajava**
*Family:* Myrtaceae  
*Parts used:* Leaf  
*Traditional uses:* Diarrhea, dysentery, gastroenteritis, anti cough, ulcers, bowels, cholera, hypoglycemic, anti-inflammatory, analgesic, antipyretic.

**Sansevieria roxburghiana**  
*Family:* Asparagaceae  
*Parts used:* Leaf  
*Traditional uses:* leaves are used for fiber production; in some species, the plant's sap has antiseptic qualities, and the leaves are used for bandages in traditional first aid.

**Adhatoda vasica**
*Family:* Acanthaceae  
*Parts Used:* Leaf  
*Traditional uses:* Asthma, dermatitis, antispasmodic and chronic bronchitis.

**Terminalia arjuna**
*Family:* Combretace  
*Parts used:* Bark  
*Traditional uses:* Cardiovascular diseases, myocardial infarction, degenerative neurological diseases, cancer, amyloidosis, acute pancreatitis, arthritis, atherosclerosis, inflammatory bowel disease, diabetes, senile dementia, retinal degeneration and senile cataract.

Identification of Plant materials:

Clean plants parts were collected from the different pastoral and rearward area of Rangpur division, Bangladesh. The taxonomic identities of this plant were determined by the skill of the Department of Pharmacy of our University. Each specimen were labeled, numbered and noted with date of collection, the locally and their medicinal uses and their approximate dosages of administration were recorded. Plant parts were washed with 70% alcohol and then rinsed with sterilized distilled water, air dried and stored.
Preparation of extracts:

Fresh dry plant samples were collected in a fiber bags. The materials were grinded to fine power with the help of mixer grinder. Then these powered materials were used for the preparation methanol extracts.

Extraction of leaves:

About 250 gm of powdered leaves was taken in a clean flat –bottomed glass container and percolated with 3 liters of Methanol. The container with its content was sealed and kept for 7 days with occasional shaking and stirring .the mixture was the filtered successively through a piece of clean white cotton .The filtrate thus obtained are kept in a open air for the evaporation of the methanol. After 10 to 15 days all the methanol are evaporated and I got the extract of methanol.

Microorganisms used:

Two gram positive (Staphylococcus aureus and Bacillus cereus) and three gram negative (Escherichia coli, Vibrio cholerae, and Pseudomonas aureus) pathogenic bacterial samples were collected from the Dhaka University. The organisms were sub-cultured in nutrient broth and nutrient agar for use in experiment.

In-vitro Antibacterial Study:

Following methods were performed to determine the antimicrobial activity of plant extracts – The modified agar-well diffusion method of Cappuccino and Sherman (1999) was employed to study the antibacterial activity of the plant extracts 10. 3.7% of Muller Hinton Agar was mixed with hot distilled water and autoclaved at 15 lb pressure for 15 minutes. After autoclaving, it was allowed to cool to 45°C-50°C. Then the medium was poured into sterilized Petri dishes with a uniform depth of approximately 4 mm. The agar medium was allowed to cool to room temperature. To standardize the inoculums density for sensitivity test, a BaSO4 turbidity standard, equivalent to 0.5 Mac Farland standards were used. For the transformation of bacteria to Petridish a swab dipped in standard inoculums was used. After dipping, the swab was used to spread the bacteria on the media in a confluent lawn. Then the Petri dishes were left for 3 to 5 minutes. Using cork borer, 6 mm diameter wells were made in all the plates. Different extracts were added to the groove with one blank of each. Plates were incubated for 24 hours at 37°C. After 24 hours the plates were examined. Results were recorded, as the presence or absence of inhibition zone. The inhibitory zone around the well indicated absence of bacterial growth and it was reported as positive and absence of zone is negative. The diameters of the zones were measured using diameter measurement scale. The effect of plant extract was compared with that of standard antibiotic Ciprofloxacin.

The Minimum inhibitory concentration was evaluated by dilution method 11 on plant extracts to observe the antimicrobial activity. Antibacterial agents were incorporate in different concentration with liquid media. These media were inoculated with the test bacteria and incubated. The lowest dilution at which there is no growth of organisms is considered significant. The turbidity of the test sample is measured by spectrophotometer with respect to blank.

RESULTS AND DISCUSSION:

The methanol extract showed different levels of antimicrobial activity toward test organisms. The methanol extract of Psidium guajava showed highest antimicrobial activity against all the tested organisms. The methanol extract of Adhatoda vasica exhibited low antimicrobial activity against Bacillus cereus, Escherichia coli, Vibrio cholera (Table-1). Zone of inhibition (mm) of Methanol extract of Sanseiveria roxburghiana, Terminalia arjuna were active against all the test organisms. To screen the antibacterial activity against tested organisms, Ciprofloxacin were used as a standard.

<table>
<thead>
<tr>
<th>Test microorganisms</th>
<th>Diameter of zone of inhibition (mm)</th>
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<tbody>
<tr>
<td></td>
<td>Psidium guajava</td>
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<td>Gram positive bacteria</td>
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<tr>
<td>Bacillus cereus</td>
<td>15</td>
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<td>Staphylococcus aureus</td>
<td>14</td>
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<tr>
<td>Gram negative bacteria</td>
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<td>Escherichia coli</td>
<td>12</td>
</tr>
<tr>
<td>Pseudomonas aureus</td>
<td>10</td>
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<tr>
<td>Vibrio cholerae</td>
<td>11</td>
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</table>
Successful prediction of botanical compounds from plant material is largely dependent on the type of solvent used in the extraction procedure. Traditional medicinal plants are use primarily water as the solvent but in our studies we found that plant extracts in organic solvent (methanol) provided more consistent antimicrobial activity. These observations can be rationalized in terms of the polarity of the compounds being extracted by solvent and in addition to their intrinsic bioactivity. The results of screening are presented in Table 1. The methanol extracts of *Psidium guajava, Sansevieria roxburghiana Terminalia arjuna* and *Adhatoda vasica* were subjected to a preliminary screening for antimicrobial activity against Five standard bacteria: two gram positive (*Staphylococcus aureus and Bacillus cereus*) and three gram negative (*Escherichia coli*, *Vibrio cholerae*, and *Pseudomonas aureus*). It was clear that the methanol extract of selected medicinal plants exhibited activity against the tested organisms. Methanolic extracts of plants generally possess terpenes and phenolics, which are reported by different workers as antimicrobial compounds. Plants are important source of potentially useful structures for the development of new antimicrobial agents. The first step towards this goal is the in vitro antibacterial activity assay. Many reports are available on the antiviral, antibacterial, antifungal and anti-inflammatory properties of plants. Some of these observations have helped in identifying the active principle responsible for such activities and in the developing drugs for the therapeutic use in human beings. The observed antimicrobial activity against the tested organisms could be due to the presence of tannins and cyanogenetic glycosides in the extract as these have previously been reported to possess antimicrobial activities. These could explain the rationale for the use of the plant in the treatment of the various conditions in traditional medical practice.

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