SUMMARY
The human pathogenic bacteria *Shigella spp.* are Gram -ve, non motile, non sporing, non capsulated short rods without any flagella which grow well on ordinary media (Mac Conkey agar, nutrient agar, eosin-methylene agar etc.) forming 1.0 - 2.0 mm. circular, transparent and colourless colonies. *Shigella* are widely distributed in nature, occurring in intestine. On the basis of colony characters and biochemical tests, three species of this pathogen have been identified in different samples of faeces of the patients (*Sh. dysenteriae*, *Sh. boydii* and *Sh. sonnei*). These patients were suffering from bacillary dysentery. Severe infection causes fever, vomiting and dehydration. Death may occur due to circulatory failure or kidney failure.

Antibacterial compounds of plant origin are easily biodegradable, have little or no side effects on human beings and more efficacious than the other synthetic antibiotics. The present study was undertaken to find out the antibacterial activity in the plants of this locality (Azamgarh) and to investigate the bacteritoxic fraction of the most active plant in order to elucidate its usefulness as a potent bactericide.

The test pathogen *Shigella spp.* was isolated from the collected samples of faeces which were directly obtained from the patients in district hospital, Azamgarh. The isolated pathogen was
identified on the bases of Gram staining, motility test, morphological and biochemical studies.

Fifty percent ethanolic extracts of 123 available plant samples comprising root, stem, leaves, fruits and seeds of 98 species, representing 93 genera and 50 families of higher plants, were assayed for their antibacterial activity against the test pathogen, *Shigella spp.*, by the 'Inhibition zone technique'. The leaves of *Adhatoda vasica* were found to possess strong bacteritoxicity and it formed the largest inhibition zone in our experimentation. Therefore, further detailed investigation was made on the leaves of this plant.

Effect of certain physical factors viz. storage time, temperature range and autoclaving, on the bactericidal activity of leaves was determined and it was found that storage of the leaves upto 15 days did not affect its antibacterial activity and also heating upto 40 °C caused no adverse effect on the toxicity of the leaves. However, autoclaving caused adverse effect and bactericidal activity was lost.

The hydroethanolic extract of leaves was fractionated by differential solubility method and its different organic fractions were assayed against the test pathogen to find out the active fraction. Only petroleum ether fraction was found to possess bactericidal activity.
Minimum inhibitory dose of the active fraction was evaluated by the usual inhibition zone technique and it was found that 12.0 mg of the constituents of active fraction were required to control one loopful of the test pathogen, *Shigella spp.*. The active fraction at its MID was compared with the commonly used commercial antibiotics and it was found that the active fraction was more active than the commercial antibiotics tested. The active fraction was also assayed against some available pathogenic bacteria including *Escherichia coli* and *Enterobacter sp.*. Other pathogenic bacteria tested were *Salmonella typhi*, *Pseudomonas aerogenes*, *Proteus vulgaris*, *Staphylococcus aureus* and *Klebsiella sp.*. It inhibited all the tested Gram +ve and Gram -ve bacteria, thus proving it to be a broad spectrum bactericide.

The finding thus suggest that the leaves of *Adhatoda vasica* having strong bactericidal activity, broad antibacterial spectrum, superiority over several commercial antibiotics (Ciprofloxacin, Cloxacillin, Lincomycin, Penicillin G, Kanamycin and Erythromycin) can be exploited as a potent bactericide against human pathogen.