From centuries plants have been a valuable source of natural products for maintaining human health. Numerous present day medicines have been developed from plants as they provide the predominant ingredients of medicine. In traditional systems of medicine the whole plant or its parts like leaf, stem bark, flower, seed and root are used. Natural drugs from plants are gaining popularity because of their advantages such as often fewer side effects, better patient tolerance, relatively less expensive and in reach of villagers and poor people.

Medicinal plants have served as a major source of new pharmaceutical products and relatively inexpensive preparatory materials for the production of some very popular drugs.

Plants face many stresses in their life cycle and in the process of combating, produce secondary metabolites. Some of these secondary metabolites have the capacity to fight microorganisms and can be used for infectious ailments.

It is evident, from ethnomedical survey, that indigenous people use wide range of plants therapeutically to maintain their health. This knowledge is fast disappearing and there is urgent need to document this precious knowledge.
*Justicia adhatoda* Nees. is one of the most important genera of family Acanthaceae. The family Acanthaceae is medicinally very important. *J. adhatoda* (Vasaka) is traditionally used in Ayurveda, Siddha and Unani medicines, particularly for respiratory tract ailments. It is also suggested to possess cardioprotective, radio-protective, hepatoprotective, abortifacient, antidiabetic, antimicrobial, antispasmodic, anthelmintic, protect from arthritis, antiseptic antituberculosis, antiasthmatic, insecticidal, wound healing, antiulcer, gives relief in malarial fever, gonorrhoea, rheumatism, renal protective, HIV-protease inhibitor, antimutagenic and antityphoid properties.

The Informant Consensus Factor (ICF) of *Justicia adhatoda* for different ailments is near 1.0 and Use Value (UV) is 0.33.

Authentication of plant material is of prime concern as it provides information about the characteristics of the plant species.

In transverse sections of leaves and stem of *Justicia adhatoda* Nees., outer cortex, inner cortex and pith were dark staining and contained secondary metabolites, which are of medicinal value.

Carbohydrates are the most widely distributed compounds in plant and animal kingdoms. In *J. adhatoda* leaves 3.45 mg/g carbohydrate was recorded.
The protein contents were 5.2 mg/g in *J. adhatoda*.

Determination of physical constants of crude drug throws light on botanical identity of the species. Total ash, 15.2; water soluble ash, 3.9; acid insoluble ash, 1.1 and sulphated ash were 1.8 (% w/w) in *J. adhatoda*.

Different extractive values of a drug give an idea about chemical nature of a drug. 20.1 water soluble, 6.3 methanol soluble, 5.9 ethanol soluble and 0.7 (w/w) petroleum ether soluble extractives were recorded for *J. adhatoda*.

Fluorescence analysis of crude drug of *J. adhatoda* appeared olive in day light and green in short UV and olive dark in long UV light. Crude drug dissolved in water appeared dark brown in day light, grass green in short UV and dark green in long UV light.

Foreign organic matter was recorded 1.1 (% w/w) for *J. adhatoda*.

The plants are the richest source of phytochemicals and the beneficial effect of plant material results from their synergistic interactions.

During the present investigation, the presence of reducing sugar, starch, alkaloids, flavonoids, triterpenoids, tannins, sterol, glycosides and phenolic compounds were established in *J. adhatoda* leaves. However, presence of cystine was not recorded.
In process of defense against parasites, plants produce secondary metabolites for their survival. These secondary metabolites constitute the medicinal value of a plant drug. The crude extracts of the plant may have inhibiting effects on test organisms. *J. adhatoda* leaves, methanolic and aqueous extracts (200 mg/ml) showed antibacterial as well as antifungal activity. Maximum antibacterial activity was shown against *Staphylococcus aureus* by leaf extract (24 mm) followed by methanolic extract (22 mm). *Pseudomonas aeruginosa* showed maximum resistance and zone of inhibition 16 mm and 18 mm was developed by methanolic extract and leaf extract respectively.

During the present investigation, antifungal activity of *J. adhatoda* leaf extract (22 mm) and methanolic extract (20 mm) showed maximum inhibitory activity against *Fusarium oxysporum*. *Aspergillus flavus* showed maximum resistance and the inhibition zone developed by leaf and methanolic extracts was 14 mm and 13 mm respectively. The present study on *Justicia adhatoda* Nees. emphasizes its antimicrobial properties.

The micropropagation of *J. adhatoda* was attempted under conservation strategies. Best callus induction was observed from the nodal segments in MS medium supported with NAA (10 mg/l), BA (0.1 mg/l), Kn (0.1 mg/l) and 2,4-D (2.0 mg/l).
The maximum shooting (81%) was observed in MS medium supported with IAA (1.0 mg/l), BA (1.0 mg/l) and Kinetin (1.0 mg/l).

*Justicia adhatoda* Nees. is classified as medicinal plant as it contains substances that can be used for therapeutic purposes or as precursors for the synthesis of drugs.