Silk, a naturally produced animal fibre of unparalleled grandeur is rightly called as Queen of textiles. In India, the major mulberry silk producing states are Karnataka, Andra Pradesh, West Bengal, Tamil Nadu and Jammu and Kashmir, which together accounts for 92 percentage of country’s total mulberry raw silk production. Geographically, Asia is the main producer of silk in the world and produces over 95% of the total global output. But, bulk of it is produced in China, India, Japan, Brazil and Korea. India is ranked as the second major raw silk producer in the world. It contributes about 18 per cent to the total world raw silk production.

Sericulture is one of the most labour intensive sectors, combining activities of both agriculture and industry. It is practiced in about 53,814 villages all over the country. It provides employment to about six million people, most of them being small and marginal farmers, or tiny and household industry mainly in rural areas. Silk and silk goods are very good foreign exchange earners. The Indian silk goods have high export potential because of its distinctness and low production cost. During 2007-2008 the total silk exports were Rs. 1,376.91 crores (business.gov.in).

Mulberry silkworm *Bombyx mori* is a poikilotherm, susceptible to several diseases (Prasad, 1999). There is no silkworm race at present, which deemed as totally resistant to diseases or pests (Nagaraju, 2002). Bacterial diseases are common in silkworms and tend to occur in the hot and
humid summer and autumn rearing seasons. The bacterial diseases are classified as bacterial septicemia, bactericemia and bacterial toxicosis. The haemolymph and silk glands are the major centres for high multiplication of bacteria. The damage to the gut wall paved way for the entry of the pathogens into the haemocoel. Bacterial flacherie is one of the serious diseases of silkworm causing cocoon crop loss to the tune of 75 per cent (Sidhu and Singh, 1968). Various ecological factors such as higher and lower temperature, humidity, ventilation and feed adversely affect the physiological functions of silkworm. Stress produced by inadequate hygiene like contaminated rearing trays, sheet papers, cow dung and malnutrition are responsible for bacterial flacherie in *B. mori*.

Flacherie may caused by microbes such as *Bacillus* sp., *Streptococcus* sp., *Staphylococcus* sp., *B. thuringiensis*, *Pseudomonas* sp., *Achromobacter delmarvae* etc. Symptoms of flacherie include loss of appetite, sluggishness of worms with slow growth, shrinkage, swelling of thorax, appearance of brown specks on skin, oral and anal discharge liquefaection of inner organs, rupturing of skin and oozing out of foul smelling brown liquid (Manimegalai, 2009). The first Chapter deals with the isolation and identification of Bacterial responsible for flacherie infection.

Management of silkworm diseases is one of the vital components of successful silkworm rearing for obtaining higher yield and quality cocoons. Chemical disinfectants, bed disinfectants, antibiotics and botanicals are being used for disease management. One of the problems in the development of resistance of haemotherapeutic agent was due to abuse of
drugs. So there was a need to develop alternative antimicrobial drugs for the treatment of infectious diseases from medicinal plants. India being a vast country with wide variations in climate, soil, altitude and latitude is bestowed with a very rich botanical wealth. Plant compounds being degradable and selective in their toxicity are considered as valuable ingredients for controlling plant diseases caused by bacteria, viruses, and fungi. Several compounds like proteins, peptides, saponins, alkaloids, tannins, quinines, phenols, phytoalexins, terpenes and sterol from plant sources are known to have antimicrobial activities. The second chapter deals with the antimicrobial activity of botanical extract against the bacteria causing flacherie in *B. mori*.

Insects show defense response through cellular and humoral components (Gupta, 1986). The free haemocytes in the haemolymph of insects are responsible for the defense reactions against foreign agents that penetrates the haemocoel (Narayanan, 2004). In insects several types of haemocytes were observed in the haemolymph. The chief defensive cells are the plasmatocytes and the granular cells in *B. mori*, which take part in phagocytosis, encapsulation and nodulation reactions in response to bacterial infection (Ottaviani, 2005). In the third chapter of this thesis has been made to study the morphological structure, total and differential haemocyte count, when the *B. mori* were exposed to botanical extracts and bacterial treatment.

Nutrition plays an important role in improving the growth and development of *B. mori* (Kanafi et al., 2007). The silkworm larva consumes all kinds of nutrients from the mulberry leaves to build its body and spin
cocoon. Adequate feed is required to rear silkworms and addition of food supplements with botanicals to the mulberry can increase the silkworm production with limited food, leading to economic gains. The healthy growth of the silkworm and ultimately the economic traits such as, cocoon and grainage parameters are influenced largely by the nutritional status of the leaves fed to worms. The physiological stimulation of plant extracts on silkworm larvae might probably lead to remarkable larval growth leading to increased food consumption and cocoon weight. The fibroin content of the cocoon shell significantly increased in response to the dietary supplementation of botanical (Manimuthu and Isaiarsu, 2010). Fourth chapter of this thesis reveals with findings on the effect of botanical extracts and microbial treatment on economic characters such as weight of cocoon, pupal and shell, shell ratio, filament length, denier, silk index, silk percentage and grainage parameters of silkworm, *B. mori.*