In the present study the efficacy of *Pongamia pinnata* (L.) Pierre extract on a host plant infected by root-knot nematode was carried out. Varied concentrations of methanol leaf extract of *P. pinnata* on the experimental nematode, *Meloidogyne incognita* and some aspects of biochemical and physiology of the host plant, *Vigna mungo* were tested. The effect of leaf extract on the developmental aspects of the nematode inside the plant, *V. mungo* was also studied. The salient findings are summarized below:

1) The histopathological study on control uninfected root showed the following features like tetrarch and triarch arrangement, the vascular strand was intact with well preserved xylem element and the phloem appeared as a thin layer around the xylem.

2) Due to nematode infection the following features were emerged akin to histological aspects of the host plant such as crushed xylem elements, reduction in xylem numbers due to intracellular migration of the nematodes, heavy accumulation of giant cells, collapsed phloem elements and the giant cells with hypertrophic and hyperplasia nuclei of varied size.
3) Due to nematode feeding and intraroot migration of the larvae of the nematode, the cortex and stelar elements were damaged which resulted in restricted water absorption and transport.

4) The plants susceptible to nematode infection became nutritionally deficient and exhibited symptoms like stunted growth, chlorosis and wilting.

5) The high densities of nematode population (final population) output in the host plant created a stress on the plant, with a reduction in the plant vigour leading to reduced growth of the host plant.

6) The impact of pathogenesis was reflected at tissue level with low sugar, an elevated protein, lipid and phenol levels. Due to possible consumption by the pathogen for its sustenance and part of mobilization in the host metabolic pool might be a plausible reason for sugar reduction and increments for lipid, protein and phenol indicated the possible metabolic events occurring during pathogenesis.

7) It was discernible that the reduction in chlorophyll pigments as observed in the present study might have resulted in reduced photosynthetic rate and this inturn resulted in reduced sugar synthesis.

8) Since the above said metabolic events required mediation of enzymes, the enhanced activities of the dehydrogenases (Catalytic enzymes) indicated accelerated catalysis while the increased levels of activities of
the total endogenous reductases (synthetic enzymes) indicated enhanced synthesis of lipid, protein and phenol.

9) The tolerance level of susceptible hosts can be achieved by controlling the nematode population coupled with enhancing the growth of root and shoot systems. This changes could be brought to some extent by treating the infected host plant with *P. pinnata* leaf extract.

10) The histopathological study revealed that roots of *P. pinnata* treated with methanol leaf extract having infection site with galls containing one or few syncytia like cells that would not support the development of mature females.

11) It was also noted that the maximum numbers of larvae entered into the root failed to develop into mature female.

12) It could be presumed that during the slow break down of plant extract in the soil, some nemostatic factors were believed to be released in addition to some secondary metabolites. The plants might have absorbed the slow break down products of the extracts from the soil and the presence of these factors inside the plant could have a telling effect on the nematode development and prolonged the life cycle of the nematode.

13) The significantly increased shoot and root weights of plants grown in soil with plant extract additives could be attributed to the reduction in
nematode densities and also the possibility of extract serving as organic
manure.

14) The presence of breakdown products and secondary metabolites in the
extract inside the plant seemed to create a stress on the pathogen by
altering the substrate - enzyme feeding relations of the nematode.

15) Under this stress condition the pathogen could have been impeded from
consuming the sugar faster, with the result not only the subsequent
progeny output of the nematode was getting reduced, but also a high
sugar level was discernible in the plant extract treated (3500 ppm)
infected plant.

16) The presence of these higher sugar levels, the sugar carbon might have
lead to enhanced lipid, protein and phenol synthesis as observed in the
extract treated infected plant and as a consequence of this, the growth of
the infected plant was increased, probably due to improved vigour with
less pathogenic impact.

17) A perusal of the redox enzyme activities showed a specific increase of
dehydrogenase activities in the infected host under plant extract
treatment. This indicated greater energy yield through catalysis due to
expected tissue damage by the nematode.

18) The reduced galling phenomena, coupled with the improved weight of
the host plant and the enhanced metabolism observed in the present
study seemed to indicate improved vigour of the host plant under plant extract treatment.

19) GC-MS analysis showed the presence of Alkaloids (4-Piperidinamine, N, 1-dimethyl; 4-Hydroxy-N-methylpiperidine), Diterpene (phytol), Fatty acid (n-Hexadecanoic acid or palmitic acid) and Steroids (Stigmasta-5, 22-dien-3-ol, acetate, (3β); Stigmastan-3-ol, 5-chloro-, acetate, (3β,5α)) which are already established nemostatic principles.

20) These above said metabolites indirectly or synergistically might have controlled the nematode in the present study.

21) Though the extract contains different secondary metabolites served as nematicides a future study is imminent to ascertain the role of a particular metabolite in controlling the nematode population with an improved tolerance level of any host plant.