SUMMARY AND CONCLUSION

In the present investigation was carried out in *Solanum melongena* L. var. *insanum* (L.) Prain. In terms of micropropagation, callus induction, solasodine production with special reference to fungal elicitors, hairy root induction, antiaflatoxicosis and antimicrobial activity.

**Direct plantlet regeneration**

The young leaf explants were subjected to direct plantlet regeneration using KIN and BAP individually. The explants produced multiple shoots depending upon the concentration of cytokinin in the medium. Among the various concentration of KIN or BAP 5.0 mg/L BAP or KIN was most suitable for multiple shoot development. BAP was effective than KIN. The regenerated shoots were rooted with MS half strength B5 with IBA (0.5-2.0 mg/L). IBA 2.0 mg/L forming well developed roots without any callus formation.

**Callus induction**

Field grown young stem explants cultured on MS+B5 medium supplemented with different concentration of IAA + KIN and IAA + BAP (1.0-3.0 mg/L IAA and 0.5 mg/L KIN or BAP). The percentage of callus induction and callus growth was directly proportional to the concentration of auxin introduced in the medium. Among the various concentration of IAA with KIN and BAP, IAA 3.0 mg/L + 0.50 mg/L BAP was found suitable for callus induction. The calli derived from different concentrations were green and compact in nature.

**Solasodine production**

Solasodine content was estimated from different dried powder samples of *Solanum melongena* L. var *insanum* L. Prain. was using high performance liquid chromatography. Among
the various field grown samples the pericarp powder produced maximum amount of Solasodine.
The order of solasodine production was root < Leaf < Seed < Stem < Pericarp. But in callus derived samples, the solasodine content was higher in calli obtained from 3.0 mg/ L IAA + 0.5 mg BAP followed by 3.0 mg/L IAA + 0.5mg of KIN. The Solasodine content was increased with increasing concentration of IAA.

**Effect of fungal elicitor on solasodine production**

The fungal elicitor like *A. flavus, A. nidulans, P. purpurognum* and *P. citinum* were screened against solasodine production using pericarp stem and stem derived callus. The fungal elicitors significantly increased the solasodine over control samples.

**Hairy root induction and solasodine production**

Hairy roots were induced from regenerated shoots using *Agrobacterium rhizogenes* ATCC 15834. The hairy roots were characterized by their vigorous growth branched in nature and negative geotropism. The hairy roots are isolated and subjected into mass cultivation. Mass cultivated hairy roots were harvested and dried for solasodine production. The solasodine content of hairy root was higher than that of field grown sample and callus derived samples.

**Antiaflatoxicosis studies**

Aflatoxin fed aflatoxicosis induced haematological changes were studied. The ethanolic extracts of field grown samples and callus derived extract were tested against aflatoxicosis in albino rats. All the plant samples and stem derived callus extract were drastically reduced the aflatoxin mediated haemotoxicity. The effect was similar to that of the standard drug silymarin.
Thus proving the innocuous nature of test sample and free from haemotoxicity of aflatoxin fed rats.

**Antimicrobial activity**

Ethanolic extract of field grown plant and stem derived callus were screened against Gram positive, Gram negative bacteria and pathogenic fungi. All samples were significantly inhibited the growth of pathogenic microorganisms.

**Conclusion**

The micropropagation/Direct regeneration studies carry out in this particular medicinal plant is useful for conservation. The production of solasodine production from field grown plant samples and *in vitro* raised callus and hairy roots indicated the alternative source or supply of solasodine. The pharmacological and antimicrobial studies evidenced the medicinal value of *Solanum melongena* L.var. *insanum* (L.) Prain.