SUMMARY
1. The cellular slime mould, *Dictyostelium discoideum* has been utilized for studying the affects of organochlorine pesticides lindane, BHC (containing $\alpha$, $\beta$, $\delta$ and $\gamma$ isomers) and DDT on its growth and development. The order of pesticides toxicity on both growth and development is BHC > lindane > DDT.

2. *Dictyostelium* amoebae treated with organochlorine pesticides showed distorted cellular morphology such as retraction of pseudopodia and rounding up of cells, smaller size, bleb formation and cellular exudate. Scanning electron micrographs of the treated cells revealed membrane indentations and ruptures. Transmission electron microscopy showed disintegration of cell membrane, nucleoli and hypervacuolation of the pesticide treated cells.

3. The lag phase vegetative cells were found to be the most sensitive to pesticide treatment followed by the mid log and stationary phase.

4. When *Dictyostelium* vegetative amoebae were grown in continuous presence of pesticides, growth inhibition occurred at concentrations as low as 5 ppm. In cells treated for 20 min. only higher doses 60 ppm and above inhibited the growth. The growth inhibition resulted from (i) increased cell lysis, (ii) growth stasis, (iii) lengthening of generation time.

5. Pesticide treatment of *Dictyostelium* spores affected their germinating ability.

6. Severe affect of pesticides were also seen in colony morphologies which revealed (i) delay in plaque formation and (ii) smaller size of colonies.

7. Pesticides inhibit the macromolecular (DNA and protein) syntheses in *Dictyostelium* amoebae.
8. Phagocytosis was inhibited while pinocytosis was stimulated in the pesticide treated cells.


10. Pesticides altered the morphogenesis in the developing *Dictyostelium* cells.

11. Total inhibition of development occurred when cells were plated on pesticide agar (20 ppm). Complete lysis of the slugs occurred when plated on 20 ppm pesticide agar.

12. Morphogenesis was delayed and abnormal (with smaller and fewer aggregates, slugs and fruiting bodies) when cells were treated for 20 min with 100 ppm DDT, 60 ppm BHC and 60 ppm lindane. Total inhibition of development occurred when treated with 100 ppm of lindane and BHC.

13. Cell motility, cAMP-chemotaxis and cell adhesion were effected in the pesticide treated developing *Dictyostelium* cells.

14. Extracellular phosphodiesterase activity was found to be reduced in the supernatant of the pesticide treated cells thereby leading to cAMP accumulation and destroying the cAMP gradient essential for completion of morphogenesis.