1. The neurosecretory neurones of *Poekilocerus pictus* and *Dydercus similis* have been studied in the normal and senile stages, to see the changes occurring in them during ageing.

2. There are four 'A', 'B', 'C' and 'D' type of neurosecretory cells, present in the pars-intercerebralis of *P. pictus* and *P. similis*. Of these only the 'A' type of cells show noticeable secretion, which can be studied by PF staining method.

3. There are about seventy to eighty 'A' type of neurosecretory cells found in the median group in *P. pictus*.

4. In *P. similis* the number of 'A' type of cells in the median group is about eight to ten.

5. These 'A' type of cells show a change in their secretory activity during the early stages.

6. In both *P. pictus* and *P. similis*, the neurosecretory cells of the newly moulted adults, start secreting neurosecretory material in the form of secretory granules. These secretory granules are also seen in the axons.

7. All the neurosecretory material is passed through the axons before egg-laying.

8. The egg laying *P. pictus* takes place after thirty to thirty-two days after emergence, while in *P. similis* it takes place after seven to nine days after emergence.
9. After the egg laying the material starts accumulating in the neurosecretory cells. The neurosecretory material is synthesized in the cells but it is not released for further circulation.

10. The size of the neurosecretory cells and their nuclei increase, with the accumulation of the material, in the senile stage. 

11. Thus during the neurosecretory cells show accumulation of the neurosecretory material, and the failure to cause the release of the hormone from the cells may be affecting the rate of ageing.

12. Histochemical observations reveal that the neurosecretory cells are rich in protein.

13. The concentration of the proteins during senile stage in the 'A' type of neurosecretory cells, has been studied both in P. pictus and P. similis.

14. The neurosecretory cells show a high concentration of proteins in the senile stage.

15. During the early stages, i.e. before egg laying, the axons also show proteinaceous material, but in the senile stages, the axons are not prominent, as they do not contain proteinaceous material.

16. Thus, it may be assumed that the neurosecretory cells continue to synthesize proteinaceous material, even in the old age, though there is no significant transport of the material through the axons.
17. The neurosecretory cells also show a high cholinesterase activity. The histochemical tests reveal that, the cytoplasm of the neurosecretory cells show the cholinesterase activity, while the nuclei of these cells give a negative test.

18. The cholinesterase activity in the total brain tissue of P. pictus and P. similis has been studied, during active and senile stages, using the spectrophotometric method.

19. The cholinesterase activity shows an initial rise during early stages. It then decreases and in the senile stage it becomes constant.

20. Thus the cholinesterase activity is correlated to the neurosecretory activity. The activity of the enzyme cholinesterase is high when the neurosecretory cells show a high secretory activity. In the senile stages, when the neurosecretory cells do not show any activity, the enzyme activity is constant.