LIPID HISTOCHEMISTRY OF CESTODE PARASITES,
*Cotugnia ambae* and *Lytocestus wardhaensis* n.sp.

INTRODUCTION

Many techniques of lipid histochemistry have been thoroughly reviewed by Adams (1965) and Bayliss High (1984). Some older methods which are valuable, specially for revealing the structural features of invertebrates tissues, are reviewed by Wigglesworth (1988). Only few of the available procedures selectively demonstrate any of the classes of lipid. Therefore it is possible to obtain information about several physical properties and chemical constituents of these substances.

In the present communication Bromine-Sudan black B, method of Bayliss and Adams (1972) was used for the evaluation of all types of lipids but bromination was omitted because free cholesterol was not stained and phospholipids were less strongly coloured.

MATERIALS AND METHODS

Four intestines of *Gallus gallus domesticus* and *Ciarias batrachus* were dissected in laboratory. Three intestines of *Gallus*
domesticus and one intestine of Clarias batrachus were infested with cestode parasites, these parasites were removed intact from intestines of both animals, few of them were flattened and preserved in 4% formalin, stained with Harris haematoxyline, passed through graded alcohol, cleared in xylol, mounted in D.P.X. and whole mount slides were prepared for identification. After closed observations they were confirmed as cestode parasites of genus Cotugnia and the genus Lytocestus.

Remaining worms of both were fixed in potassium dichromate fluid, dehydrates in graded alcohol and embedded in paraffin wax (M.P. 58 - 60°C), sections were cut at 9μ. The slides were deparaffinized in xylene brought to 70% alcohol, stained in Sudan black B and then dehydrated in alcoholic grades, cleared in xylene and mounted in glycerine jelly.

OBSERVATIONS

Microscopic observations presented in (fig.6) indicates that, peripheral region of Cotugnia and Lytocestus stain black and inner portion may be testes, ovary, cirrus pouch, longitudinal and circular muscles stain moderate black or brownish black in Lytocestus
Fig. 6: Histochemical demonstration of lipid in peripheral region of (a) *Cotugnia ambae* n.sp. (b) *Lytocestus wardhaensis* (Sudan black-B)x 100 n.sp.
Fig. 7: Histochemical demonstration of lipid in parasites (a) *Cotugnia ambae* n.sp. (b) *Lytocestus wardhaensis* (Sudan black-B) x 100 n.sp.
*wardhaensis* but in *Cotugnia ambae* it takes moderate black colour and nuclei stain red in both.

**DISCUSSION AND CONCLUSION**

Cestodes are made up of the usual tissues containing proteins, carbohydrates and lipids (Ph.D. Thesis Choudhary, 1996) but the proportion showed somewhat different pattern, from that of most other invertebrates. In cestodes the carbohydrate content tends to be usually high and proteins per unit of body weight is relatively low (Archer and Hopkirs, 1958 a & b) but lipids generally occur as mixture and because of this, the individual components may not react in their characteristic manner, lipids usually occurs as granules, droplets and in some cases bound to components, within the cells. Many methods are available, that will detect with resonable certainty of any lipids in the cell.

Histochernistry can detect exact nature and quantity of lipids and microscopic observations can be established for localized lipids, from the above observations and intensive histochemical studies we can conclude that there is high amount of lipids in the *Cotugnia ambae* which stain black and in *Lytocestus wardhaensis* moderate amount of lipids are present which stain brownish black.
Difference in the quantity of lipid in two cestodes may be due to difference in host environment or host temperature i.e. *Cotugnia* is from warm blooed host and *Lytocestus* from cold blooed host as described in the Abstract from Department of Zoology, University of Benin, Nigeria) and according to Fairbairn (1996) lipids tend to be more in the most posterior segment. In the present study also black colour portion can be the posterior segments and this high content of lipids in segments can represent the waste products of metabolism (Von T. Brand, 1952).

One of the more unusual features of the composition of cestode lipids are the phospholipids which often account for more than 20 % of the total lipids, in *Lytocestus* brown colour portion can be the phospholipids. Thus, it is assumed that the intestinal parasites were capable of extracting nutritious materials from their host and synthesizing the fatty acids. Parasites can modify the fatty acids which are obtained from dietary sources by chain elongation.

Although the histochemical technique is useful to investigate the lipid storage and disorders which is an alternative for biochemical methods and also a valuable technology with which to probe and possibly solve, a variety of pathological problems.