

## A Note on the Preservation of Adipose Lipid

By J. T. Y. CHOU

(From the Cytological Laboratory, Department of Zoology, University Museum, Oxford)

### SUMMARY

The lipid globules of adipose cells become insoluble in fat solvents after they have been fixed in a suitable fixative and postchromed for 7 weeks at 37° C. The potassium dichromate acts merely as an oxidizing agent: little or no chromium is left in the globules.

**I**N a previous paper (Chou, 1957) it was shown that adipose lipid is rendered insoluble in a fat solvent (xylene) by postchroming for 7 weeks at 37° C. This fact can be demonstrated by an experiment carried out on paraffin sections with Sudan colouring reagents. The present investigation was undertaken to find out whether chromium combined with the adipose lipid, or whether the potassium dichromate merely rendered the lipid insoluble in fat solvents by oxidation.

Cain (1947) reinvestigated Baker's acid haematein method (1946) and found that the reaction is only given in the presence of chromium. He used diphenyl-carbazide to detect chromium.

When the staining technique of Baker's acid haematein method was applied to sections of the skin of the mouse that had been fixed in Ciaccio's fluid for 2 days and then postchromed for 7 weeks, the result was, in general, negative. In certain parts of the sections, however, especially in those adipose cells situated at the edge of the sections, the reaction was very weakly positive; the colour was sky-blue.

Other similar sections were tested for the presence of chromium by the use of diphenyl-carbazide. A saturated solution of this substance in 90% alcohol was used. With this reagent, a red to violet colour indicates the presence of chromium. Each section was washed in distilled water, laid on a slide, covered with a few drops of diphenyl-carbazide solution and examined immediately under the microscope. The result was negative both in the postchromed tissue and in the control sections that had not been postchromed, though certain adipose droplets near the edge of the section of the postchromed tissue were very slightly pinkish or light orange.

From the above experiments the conclusion can be drawn that chromium was not present in most of the adipose globules of the skin of the mouse which has been postchromed for 7 weeks, though a few globules near the surface of the piece of tissue contain a very small quantity. Experiments with Sudan colouring agents show that there is no more lipid in the globules that contain a little chromium than in those that do not. It is evident, therefore, that the presence of chromium is not necessary for fixation of adipose lipid.

It is to be presumed that potassium dichromate fixes the adipose lipid by oxidation.

A piece of the small intestine of the mouse was fixed in formaldehyde-calcium and postchromed for 7 weeks, and the sections were treated by the staining technique of Baker's acid haematein test. Examination showed that the mitochondria were strongly coloured; so also were certain parts of the cytoplasm. This result shows that a long period of postchroming does not destroy the phospholipids of the mitochondria; however, the mitochondria cannot be demonstrated in paraffin sections by Metzner's method after this prolonged postchroming.

#### REFERENCES

- BAKER, J. R., 1946. *Quart. J. micr. Sci.*, **87**, 441.  
CAIN, A. J., 1947. *Ibid.*, **88**, 467.  
CHOU, J. T. Y., 1957. *Ibid.*, **98**, 431.