The incorporation of radioacetate into lipid by adipose tissue *in vitro*

FELLER[1] has studied the ability of mouse inguinal subcutaneous adipose tissue to incorporate ^{14}C-1-acetate and ^{14}C-2-acetate into fatty acids *in vitro*. He reported twice as much conversion of the carboxyl carbon as the methyl carbon of acetate into fatty acids. With ^{14}C-1-acetate he found an average (8 expts.) of 2.51% of ^{14}C recovered as fatty acids per 100 mg fat-free tissue with a range of 1.6 to 3.46%, while with ^{14}C-2-acetate the average (11 expts.) was 1.22% with a range of 0.45 to 2.76%. The greater incorporation of the carboxyl atom of acetate was shown to occur by a pathway not involving free carbon dioxide. On the basis of these results FELLER speculated that a 1-carbon intermediate such as formate (or an "active" formyl derivative) might be involved.

In similar studies using rat epididymal adipose tissue we have found such a great variation in lipogenic activity among animals that it was necessary to use adipose tissue from one rat to obtain consistent results. Using one rat's adipose tissue as its own control we have been unable to confirm any significant difference in the incorporation of either ^{14}C-1-acetate or ^{14}C-2-acetate into lipid (Table I).

TABLE I

COMPARATIVE LIPOGENIC ACTIVITY OF METHYL- AND CARBOXYL-LABELLED ACETATE

*Incubation medium**	*% of acetate incorporated into fraction/100 mg tissue*	
	CO_2	*Lipid*
EARLE's[4] salt solution + glucose (100 mg %)	1.90	2.78
+ ^{14}C-1-acetate	1.53	2.84
	Av. 1.72	Av. 2.81
EARLE's salt solution + glucose (100 mg %)	0.54	2.19
+ ^{14}C-2-acetate	0.57	2.56
	Av. 0.56	Av. 2.38

* Incubated with 250 mg normal rat adipose tissue and 2.54 μmoles labelled acetate.

The method used was as follows: minced rat epididymal adipose tissue plus 3 ml medium was incubated for 3 h at 37.5° C in a 10 ml flask (containing a center well) which was tightly stoppered with a rubber serum stopper. Following incubation, 0.4 ml Hyamine[2] solution was injected into the center well followed by 0.5 ml 6 *N* acetic acid into the main compartment of the flask. After equilibration at 37.5° C for 90 min the Hyamine solution was quantitatively collected for counting. The contents of the flasks were then saponified, acidified, extracted with petroleum ether, and the lipid extract chromatographed by a procedure described by POPJAK AND TIETZ[3] to remove contaminating traces of ^{14}C-acetate. All samples were counted in a liquid scintillation counter* incorporating a coincidence circuit and a two-channel pulse height analyzer.

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