OXIDATION IN VIVO OF EMULSIFIED RADIOACTIVE TRILAUrin ADMINISTERED INTRAVENOUSLY*

Sirs:

Studies conducted in this laboratory have clearly shown that fat injected intravenously in an emulsified form is utilized for energy by the dog. The rate of disappearance of such fat from the blood of various species has been found to be very rapid. In order to determine how rapidly such fat is metabolized in vivo, use has been made of an emulsion which contained radioactive trilaurin. The radioactive lauric acid present in the trilaurin contained C\textsuperscript{14} in the carboxyl group, and the trilaurin was made by direct esterification. An emulsion was made containing 0.6 gm. of coconut oil, 0.4 gm. of the trilaurin, water, dextrose, and stabilizers, and made up to a total volume of 20 ml. This product was sealed in glass ampules under N\textsubscript{2} and sterilized by autoclaving.

Although a number of metabolic studies have been carried out, only one typical example will be described here. A non-fasted female rat

\begin{center}
\begin{tabular}{|c|c|c|c|}
\hline
Sample No. & Time of collection & Specific activity* & Injected C\textsuperscript{14} activity expired \\
& Per sample & Total & per cent \\
& min. & min. & \\
\hline
1 & 10 & 10 & 4100 & 2.76 \\
2 & 10 & 20 & 7560 & 7.23 \\
3 & 15 & 35 & 9060 & 15.77 \\
4 & 20 & 55 & 7910 & 25.39 \\
5 & 35 & 90 & 7220 & 40.01 \\
6 & 40 & 130 & 5510 & 51.31 \\
7 & 35 & 165 & 3580 & 58.43 \\
8 & 35 & 200 & 2640 & 63.78 \\
9 & 35 & 235 & 2050 & 67.18 \\
10 & 35 & 270 & 1670 & 70.85 \\
\hline
\end{tabular}
\end{center}

* Specific activity = counts per minute per mg. of CO\textsubscript{2} carbon.

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\* Details concerning the syntheses and emulsification techniques will be described in a more complete paper now in preparation.

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weighing 270 gm. was anesthetized lightly with ether and was injected intravenously through a tail vein with 3.9 ml. of the above emulsion. The animal was immediately placed in a respirometer chamber and serial samples of expired CO₂ were collected in 1 N NaOH. Total CO₂ determinations were made by the Van Slyke manometric technique, and radioactivity assays were made on BaCO₃ samples prepared from the alkali-carbonate solution. Preparation of the samples and counting were accomplished according to the method described by Olson et al. The results are given in the accompanying table.

Essentially the same results were obtained with animals fasted 24 hours. From these data it is apparent that properly emulsified fat is utilized immediately for energy following its intravenous administration.

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