*Summary only*

# HYDROGENATION OF UNSATURATED FATTY ACIDS BY RUMINAL FLUID *IN VITRO*

E. PAYNE

*Ruakura Animal Research Station, Hamilton*

Investigations have been made of the process of hydrogenation of $^{14}$C-labelled fatty acids *in vitro* by rumen fluid from sheep fed rations of roughage or sorghum grain.

The rate of conversion of linolenic, linoleic and oleic acids to more saturated acids has been followed by a combination of thin layer chromatography, autoradiography and isotope counting.

Previous work on hydrogenation of linolenic acid by rumen fluid from sheep fed roughage has been confirmed. It has been observed that similar processes occur in rumen fluid from sheep fed sorghum grain with or without urea. However, the rates of certain hydrogenation reactions appear to be reduced, particularly the hydrogenation of oleic acid to stearic acid. This could explain the increased occurrence of oleic acid in the depot fat of cattle fed all-grain rations.

Urea did not affect hydrogenation in these conditions. The previously observed decrease in the concentration of linoleic acid in depot fat when urea is fed may well be due to changes in digestibility of the grain rather than changes in the hydrogenation process.

The conversion of $^{14}$C-oleic acid in significant quantity to a more polar acid was sometimes observed with rumen fluid from sheep fed grain rations. This acid has been identified as 10-hydroxy stearic acid.

The suggestion is made that the occurrence of this acid could be linked with digestive disturbances in grain-fed animals.