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ABSTRACTS OF COMMUNICATIONS

The Two Hundred and Ninth Meeting of the Nutrition Society was held in Room G 10, The Palmer Building, University of Reading, Whiteknights Park, Reading, on Friday, 28 March 1969, at 09.30 h. This was a joint meeting with the Biochemical Society. Contributions marked with an asterisk were presented by members of the Biochemical Society. The following papers were read:*

Plasma polyunsaturated fatty acids of herbivores grazing pasture.

By W. M. F. Leat and Judy Baker, *ARC Institute of Animal Physiology, Babraham, Cambridge*

In ruminants, although most of the dietary unsaturated fatty acids are hydrogenated in the rumen before being absorbed, appreciable amounts of $C_{18:2}$ and $C_{18:3}$ acids are to be found in the plasma lipids. However, higher concentrations of $C_{18:3}$ acid have been reported in the plasma cholesteryl esters of cows than in those of sheep and goats (Leat, 1966; Duncan & Garton, 1962).

To determine whether differences in diet could account for this variation the plasma fatty acids of various ruminants grazing pasture have been examined. Comparisons have also been made with the plasma lipids of some monogastric and ruminant-like herbivores grazing similar pasture. Grass fatty acids are 12·3% $C_{18:2}$ and 66·8% $C_{18:3}$ acids.

Table 1. *Percentage content of $C_{18:2}$ and $C_{18:3}$ acids in plasma lipids of different species*

	Cholesteryl esters (CE)				Phospholipids (PL)			
Fatty acid	Cow	Sheep	Goat	Horse	Cow	Sheep	Goat	Horse
18:2	44·7	24·3	25·5	72·9	21·5	12·8	14·6	41·2
18:3	29·5	12·0	5·9	3·8	7·3	7·9	3·9	3·2

Table 1 confirms that more $C_{18:3}$ acid is present in the plasma cholesteryl esters of the cow than in those of other herbivores: this difference, however, is not apparent in the phospholipids.

Plasma cholesteryl esters are probably derived by the transesterification of cholesterol with the β fatty acids of plasma lecithin (Glomset, 1968). In the animals studied here a linear relationship was noted between the polyunsaturated fatty acids of plasma cholesteryl esters and those of phospholipids. The percentage $C_{18:2}$ acid in plasma cholesteryl esters of all herbivores was similar to that calculated for the β position of plasma lecithin ($C_{18:2}$ CE$=1{\cdot}93\times C_{18:2}$ PL). However, it was found

* See *Biochem J.* (1969), **113**, 6P–17P.

https://doi.org/10.1079/PNS19690050 Published online by Cambridge University Press

that the affinity of $C_{18:3}$ acid for cholesteryl esters in the cow ($C_{18:3}$ CE$=4{\cdot}0\times$ $C_{18:3}$ PL) was two to three times greater than that found in the other herbivores studied here ($C_{18:3}$ CE$=1{\cdot}74\times C_{18:3}$ PL). Since the concentration of $C_{18:3}$ acid in plasma lipids is higher in calves grazing pasture than in calves fed hay it is suggested that there are two major factors responsible for the high concentration of $C_{18:3}$ acid in plasma cholesteryl esters of the cow: (a) preferential esterification of cholesterol with $C_{18:3}$ fatty acid by the plasma acyl transferase; (b) presence of grass in the diet.

REFERENCES

Duncan, W. R. H. & Garton, G. A. (1962). *J. Lipid Res.* **3**, 53.
Glomset, J. A. (1968). *J. Lipid Res.* **9**, 155.
Leat, W. M. F. (1966). *Biochem. J.* **98**, 598.

Absorption of iodinated oleic acid–^{131}I in rats adapted to diets with different levels of oleic acid. By G. VARELA and GLORIA URBANO, *Laboratory of Animal Physiology, University of Granada, Spain*

In previous experiments we have seen that the type of fat to which an animal is adapted influences its absorption and that on suddenly changing the type of fat in the diet a significant decrease is produced in its digestibility.

We now study the influence of the adaptation of three groups of rats to diets each containing 10% total fat but with different levels of oleic acid, for a period of 30 days. At the end of this period all the animals were given the same quantity of ^{131}I-labelled oleic acid (0·5 ml with 10 μc) by means of a gastric catheter. The level of radioactivity in blood was determined in the animals from this moment and at hourly intervals for the next 8 h with the following results:

Table 1. *Levels of radioactivity in blood (counts/min in total blood)*

Hours	Group 1 26% oleic acid	Group 2 82% oleic acid	Group 3 100% oleic acid
1	42 746±818	58 563±1 209	313 448± 5 729
2	58 010±700	102 537± 755	355 553± 4 721
4	69 632±794	130 687±3 844	464 255± 6 608
5½	112 436±656	180 841±3 332	422 840± 5 538
6½	95 415±729	277 794± 719	760 013±15 395
7, 8	Descending values with great dispersion. Coefficient of variation >20%		

All the results are the average values, with the mean error for ten animals.

Variance analysis shows that the differences between the three groups are statistically significant at all time intervals.

It is concluded that the higher the level of oleic acid to which the animal is adapted the greater the absorption of ^{131}I-labelled oleic acid. These results agree