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A STUDY OF ASPECTS OF  
THE UTILIZATION OF TALLOW BY  
YOUNG MILK-FED CALVES

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of the requirements for the Degree of  
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by

KEITH BETTERIDGE

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## TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	
INTRODUCTION	
CHAPTER I: REVIEW OF LITERATURE	1
CHAPTER II: MATERIALS AND METHODS	17
SECTION ONE - B.M.P. Experiment	17
2.1 Animals	17
2.2 General Outline of Experiment	17
2.3 Experimental Design	
2.3.1 Preliminary and changeover periods	19
2.3.2 Experimental periods	19
2.4 Feeds and Feeding	
2.4.1 Quality of feed	20
2.4.2 Level of feeding	20
2.4.3 Feed preparation	21
2.4.4 Feeding	22
2.5 Weighing	23
2.6 Calf Health	23
2.7 Calf Housing and Calorimetry	24
2.7.1 Operation of calorimeters	24
2.7.2 Tests applied to the calorimetric equipment	27
2.8 Collection of Faeces and Urine	27
2.9 Chemical Methods	28
2.9.1 Nitrogen determination	28
2.9.2 Lipid determination	29
2.9.3 Gross energy determination	29
2.10 Statistical Analysis	
2.10.1 Analysis of energy and nitrogen balance data	29
2.10.2 Regression analysis	30
2.10.3 Covariance analysis	31
2.10.4 Faecal observations	31
2.10.5 Significance of differences	31
SECTION TWO - S.M.P. Experiment	32
CHAPTER III: RESULTS	
SECTION ONE	
3.1 Animals	33
3.1.1 General	33
3.1.2 Health	33
3.1.3 Liveweight	36

	<u>Page</u>	
CHAPTER III (cont'd)		
3.2	Derivation of the Exponent of Liveweight	39
3.3	Intake and Digestibility	41
3.3.1	Intake	41
3.3.2	Fat globule size	44
3.3.3	Digestibility	44
3.4	Nitrogen Balance	44
3.5	Energy Balance	48
SECTION TWO		54
CHAPTER IV: DISCUSSION		56
BIBLIOGRAPHY		
APPENDICES:		
1	Calculation of Heat Production from Raw Calorimetric Data.	
2	Analysis of Chi-Square of the Classification of Faecal Consistency.	
3	Analysis of Covariance of Liveweight Gains.	
4	Analysis of Regression of log Heat Production on log Liveweight.	
5	Analysis of Regression of Energy Retained on Metabolisable Energy Intake.	
6	Analysis of Regression of Energy Retained on Gross Energy Intake.	

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Apparent digestibility of a fat plus a lecithin incorporated either by homogenisation or by melting and blending into skim milk diets fed to young dairy calves - after Warner, Locsli and Ley (1962).	10
2	Mean digestibility of ether extractable material in different diets - after Raven and Robinson (1964a).	10
3	Percentage Dry Matter of Bulked Oven-Dried Faeces Collected during the Five-Day Balance Periods.	34
4	Type of Drug Administered as Determined by Faecal Consistency and Slowness of Recovery of Calves to Normal Health.	35
5	Liveweight Data from Calves fed Buttermilk Powder.	38
6	Mean Daily Ration of B.M.P., Protein, Butterfat and Tallow/kg Liveweight, fed According to the Calf's Weight at the Beginning of each Period; Percentage of G.E. Intake Derived from Protein and from Fat, and Percentage of Total Dry Matter Intake as Fat.	41a
7	Mean Coefficients of the Percentage Apparent Digestibility of Crude Protein, Ether Extract, Dry Matter and Gross Energy.	42
8	Nitrogen Balance: Mean Data of Three Observations per Treatment ( $\text{g/kg}^{0.75}/\text{day}$ ); Mean Percentage of Digested Nitrogen Retained; Nitrogen Retained/kcal M.E. Intake; and Ratio of Digested Nitrogen Retained/kcal M.E. Intake.	45
9	Energy Balance: Mean Data of Three Observations/Treatment ( $\text{kcal/kg}^{0.75}/\text{day}$ ); Mean Percentage of Apparently Digested and Apparently Metabolised Energy Retained.	49

LIST OF TABLES (cont'd)

<u>Table</u>		<u>Page</u>
10	The Partition of Energy Retained into Protein and Fat Deposits (kcal/kg <sup>0.75</sup> /day); the Ratio of Energy Retained as Fat : Energy Retained as Protein and the Percentage of Total Energy Retained as Protein.	51
11	Liveweights and Daily Liveweight Gains of Calved Fed Skim Milk Powder.	55

## LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
A	Organisation of the experiment showing the average age of calves at the beginning and end of each period, and the number of calves used for the collection of liveweight and balance data.	16b
1	Outline of the experiment showing the relative energy intakes, the source of energy and expected daily liveweight gains of the three groups of calves.	18
2	The average growth curve of each of the 3 groups of calves.	37
3	Logarithmic relationship between heat production and liveweight.	40
4	Mean daily nitrogen balance data ( $\text{g}/\text{kg}^{0.75}/\text{day}$ ).	46
5	Mean daily energy balance data ( $\text{kcal}/\text{kg}^{0.75}/\text{day}$ ).	50
6	Relationship between energy retained and metabolisable energy intake.	53

LIST OF PLATES

Plate

Page

1

Photomicrographs of Fat Globules in (A)  
Wholemilk and (B) Reconstituted B.M.F.  
plus Tallow.

43

## ABSTRACT

1. Three groups of 4 Friesian bull calves were individually fed from 7 days of age on one of the following diets; (L) - Butter-milk powder (B.M.P.) to promote 0.45 kg liveweight gain (LWG)/day; (H) - B.M.P. to promote 0.67 kg LWG/day; (HT) - B.M.P. supplemented with beef tallow to promote 0.67 kg LWG/day. The diets, reconstituted to 15% dry matter (d.m.), were fed in direct proportion to the animal's liveweight at the beginning of each of the 3 consecutive 10-day experimental periods.

N.B. Skim milk powder (S.M.P.), initially used as the basal diet, was subsequently replaced by B.M.P. and the trial was restarted.

2. Daily faecal d.m. consistency was subjectively scored on a 0 - 5 scale. Quantitative measurements were made in conjunction with the faecal collections for the nitrogen balance.
3. Nitrogen balance data were collected from 3 of the 4 calves in each group during the last 5 days, and energy balance data during the last 2 days of each period.
4. The addition of 4% tallow (d.m. basis) significantly reduced the incidence of scours ( $p < 0.01$ ) in calves fed a basal diet of either S.M.P. or B.M.P.
5. Mean LWG's of calves on treatments L, H and HT were respectively 0.57, 0.73 and 0.62 kg/day; these differences were not statistically significant ( $p > 0.1$ ).
6. The calves on treatment H, although having the highest urinary nitrogen excretion ( $p < 0.05$ ), retained the most nitrogen ( $\text{g/kg}^{0.75}/\text{day}$ ) ( $p < 0.05$ ). The ratio of digested nitrogen retained : M.E. intake was highest for the calves fed the tallow supplement. This suggests that energy rather than protein is the factor most limiting protein deposition in calves fed solely on B.M.P.
7. During the second and third periods diets H and HT promoted a significantly greater retention of energy than did diet L ( $p < 0.01$ ). The percentage of energy retained as fat tended to be higher in calves on treatment H.
8. The maintenance energy requirement for a 50 kg calf was estimated to be 53.5 kcals D.E./kg liveweight. The efficiency of utilisation of M.E. for growth was found to be 78%.