

*The Two Hundred and Eleventh Meeting of the Nutrition Society was held in the Meeting Rooms of the Zoological Society of London, Regent's Park, London, NW 1, on Friday, 23 May 1969, at 10.45 h, when the following papers were read:*

**The effect of method of processing artificially dried grass, wafered with or without barley grain, on the growth of young cattle.** By E. K. POUTIAINEN, C. R. LONSDALE and J. C. TAYLER, *The Grassland Research Institute, Hurley, Nr Maidenhead, Berkshire*

Artificially dried S.24 perennial ryegrass, either chopped or coarsely milled, was given in wafer form to 6-month-old Hereford × Friesian steers with or without 50% (dry weight) of rolled barley incorporated in the wafer. The animals were fed to appetite for 70 days. There were six steers per treatment which were slaughtered at the end of the experiment, and an initial slaughter sample of six animals. At slaughter samples of rumen fluid were immediately preserved with H<sub>3</sub>PO<sub>4</sub> for volatile fatty acid determinations.

The dry matter (DM) digestibility of the diet was significantly depressed ( $P < 0.05$ ) by coarse milling of the forage, but daily intakes of DM or digestible dry matter (DDM) did not differ significantly (Table 1).

Table 1

Physical form of grass	Chopped		Coarsely milled	
	None	50%	None	50%
Inclusion of barley				
DM intake (kg/head day)	4.76	4.80	4.95	5.02
DM digestibility (%)	74.6	75.0	73.4	72.7
Empty weight gain (kg/head day)	1.01	1.08	1.06	1.16
Hot, dressed carcass gain (kg/head day)	0.61	0.72	0.68	0.72
Empty weight gain (kg/100 kg DDM intake)	28.5	30.0	29.1	32.1
Hot, dressed carcass gain (kg/100 kg DDM intake)	17.2	20.0	18.7	19.8
Molar percentages of acids in the rumen fluid				
Acetic	70.9	65.8	67.3	65.5
Propionic	17.7	18.2	20.2	18.2
Isobutyric + n-butyric	9.9	13.8	10.5	14.1
Isovaleric + n-valeric	1.5	2.2	2.0	2.2

The inclusion of barley in the diet depressed the weight of digesta in the alimentary tract ( $P < 0.05$ ), increased the rate of gain in empty body weight (NS) and carcass weight ( $P < 0.05$ ), and resulted in a greater efficiency of conversion of DDM to empty body weight or carcass weight ( $P < 0.05$ , see Table 1).

The greater efficiency of utilization of the diets containing barley may be related to the smaller proportion of acetic acid ( $P < 0.05$ ) observed in the rumen contents of animals receiving barley supplements (Table 1, see Armstrong & Blaxter, 1957).

One of us (EKP) is on secondment from the Agricultural Research Centre, Tikkurila, Finland and gratefully acknowledges the support of a British Council Scholarship.

## REFERENCE

Armstrong, D. G. & Blaxter, K. L. (1957). *Br. J. Nutr.* **11**, 413.

**The influence of frequency of sucrose intake on the concentration of lipids, proteins and glucose in the plasma.** By JUDITH BRICE, BETTY L. COLES, M. H. JOURDAN and I. MACDONALD, *Departments of Dietetics and Physiology, Guy's Hospital and Medical School, London, SE1*

Metabolism on a constant calorie intake is modified by changing the frequency of meals (Gwinup, Byron, Roush, Kruger & Hamwi, 1963; Hejda & Fábry, 1964; Irwin & Feeley, 1967). As a further study of this phenomenon it was decided to measure the effects on the fasting serum lipids, proteins and glucose levels of 'gorging' and 'nibbling' sucrose in a diet that contained a high proportion of this carbohydrate.

The subjects were eleven male students aged 20–22 years. The experimental diet, which was taken for 18 days, consisted of lean meat, green vegetables and water-preserved fruit eaten at midday and 17.30 h. The sucrose intake was 7 g/kg body-weight per day, and when 'gorging' half the daily amount was taken at 08.00 h and the remainder at 21.00–22.00 h. During 'nibbling' the sucrose was taken six times a day. Six subjects 'gorged' first and five 'nibbled' first. Blood samples were obtained by venepuncture after a 12 h fast at various times during the experimental diet.

There was a mean loss of weight of 0.6 kg during the 'gorging' period and a mean loss of 0.4 kg during the 'nibbling'. The percentage increase in serum triglycerides was significant at days 3 and 7 during 'gorging' and at days 14 and 18 during 'nibbling', and the slope of a regression line fitted to these values was significant during 'nibbling'. There was a significant fall in serum albumin with both dietary regimes, the fall after 'gorging' being significantly greater than after 'nibbling'. There was a significant rise in the fasting serum glucose while 'gorging' but not while 'nibbling'.

These findings confirm those previously reported that the pattern of eating can influence the metabolic response to a diet.

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## REFERENCES

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Hejda, S. & Fábry, P. (1964). *Nutritio Dieta.* **6**, 216.  
Irwin, M. I. & Feeley, R. M. (1967). *Am. J. clin. Nutr.* **20**, 816.