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ABSTRACTS OF COMMUNICATIONS

A Scientific Meeting was held at the Royal Society of Medicine, London on 17 February 1995, when the following paper was presented. This abstract arrived too late for inclusion in Volume 54 no. 3.

All abstracts are prepared as camera-ready material by the authors.

The requirement for protein during pregnancy. By D.J. NAISMITH and A. POSSELT, *Department of Nutrition and Dietetics, King's College, London W8 7AH*

Official bodies making dietary recommendations have made use of a factorial method by which requirements for pregnancy are calculated to allow for the protein retained in the products of conception and in the maternal reproductive tissues. Recommendations range from an additional 6 g/d (Department of Health, 1991) to 10 g/d throughout pregnancy (National Academy of Sciences, 1989). This procedure, however, takes no account of the physiological adjustments in protein metabolism that occur during pregnancy, on the basis of which it has been proposed that pregnancy incurs no additional costs (Naismith, 1977).

This hypothesis was tested in the present experiment in which nine pregnant rats and nine matched virgin controls, caged singly, were offered a choice of two semi-purified diets providing either 10% or 30% of the dietary energy from protein (casein), the remainder being derived from carbohydrate and fat in the ratio of 2:1. Feed consumption from each pot, and spillage, was measured daily throughout gestation. Both groups were killed on day 22 of pregnancy, and the uteri and contents were removed for analysis for protein.

On average the pregnant rats consumed 24% more energy than did their controls, this being achieved by preferentially selecting the low-protein diet. Thus the controls chose a diet providing 17.1% energy from protein, whereas in the pregnant animals the value was 13.8% ($P < 0.001$; t test for matched samples). Results for protein and energy intakes, shown for seven consecutive 3d periods, are given in the Table.

Period	Protein intake (g/d)				Energy intake (kJ/d)			
	Controls		Pregnant		Controls		Pregnant	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
1	3.07	0.28	2.92	0.16	297	9.3	327	12.5
2	2.97	0.20	2.61	0.17	291	12.5	325	15.5
3	3.04	0.28	3.02	0.24	291	11.7	351	11.1
4	3.07	0.24	2.85	0.17	301	10.7	383	13.5
5	2.98	0.33	3.08	0.13	290	13.1	380	19.5
6	2.98	0.18	3.17	0.14	286	9.5	396	21.4
7	2.77	0.22	3.10	0.13	276	12.4	362	21.3
Mean	2.98	0.04	2.97	0.07	290	3.0	361	10.5

In absolute terms, the mean daily protein intake of the pregnant rats was virtually identical with that of their controls. Analysis of the uteri and concepta revealed a gain of 6.7 g protein by the pregnant rats. Increments in the maternal reproductive tissues and viscera were not measured.

It is concluded that the total protein cost of pregnancy is met by the suppression of hepatic amino acid oxidation and urea synthesis (Naismith, 1977).

Department of Health (1991). *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom*. London: H.M. Stationery Office.

Naismith, D.J. (1977). *In Scientific Foundations of Obstetrics and Gynaecology*, pp 503-511 [E.E. Phillipp, J. Barnes and M. Newton, editors]. London: Heinemann.

National Academy of Sciences (1989). *Recommended Dietary Allowances*, 10th edition. Washington DC: National Academy Press.