

## Nutrition Discussion Forum

### *The role of dietary nucleotides in nutrition – Reply from Sánchez-Pozo*

In a recent letter, Sarwar (1997) examined the issue of the benefits provided by dietary nucleotides. In his discussion, Dr Sarwar raised a question regarding the scientific soundness of our study (López-Navarro *et al.* 1996).

He is correct in stating that the nucleotide-free and the nucleotide-supplemented diets were not isonitrogenous. Under ideal conditions a perfect N balance between diets would be desirable. In our studies the diets were designed to be nutritionally adequate. Our intent was to contrast the results of a nutritionally adequate diet with the same diet supplemented with nucleotides. Under these circumstances the nucleotide supplement represented only 0.25% of the total mass of the diet, of which N comprised approximately 0.05%. Our results showed that the impact of nucleotides was proportionally far greater than the difference in N content. We feel therefore that our results have a real application.

We firmly agree with Dr Sarwar that the exact composition and the chemical structure of the supplementary purines and pyrimidines should be specified instead of using the vague term 'nucleotides'. Nomenclature is important because the different nucleotides, nucleosides and nucleobases vary in their metabolism and action.

We thank Dr Sarwar for his observations, which underscore the value of scientific dialogue. The controversy about nucleotides indicates a growing interest in this subject, which we believe will ultimately lead to a better understanding of nutrition.

#### References

- López-Navarro AT, Bueno JD, Gil A & Sánchez-Pozo A (1996) Morphological changes in hepatocytes of rats deprived of dietary nucleotides. *British Journal of Nutrition* **76**, 579–589.
- Sarwar G (1997) Dietary nucleotides/nucleosides may have important metabolic functions but free adenine may produce adverse effects (Letter). *British Journal of Nutrition* **78**, 1037–1039.

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### *Partitioning between protein and fat during starvation and refeeding: is the assumption of intra-individual constancy of P-ratio valid?*

It is now 20 years since Payne & Dugdale (1977) published their computer model of weight regulation, which embodies the elegant concept that the partitioning between lean and fat tissue compartments is an individual characteristic. Another equally important feature of this model is that within a given adult (non-growing) individual, the proportion of protein to fat withdrawn to meet an energy deficit must be equal to the proportion of protein to fat deposited during refeeding, and this proportion, termed the P-ratio, is numerically defined as the fraction of energy either mobilized or deposited as protein respectively. In other words, the P-ratio is set as a fixed characteristic (i.e. a constant) for a given adult individual during energy deficit and energy surplus, in order to prevent drifts in body composition with each succession of (simulated) weight loss and recovery.

To gain insights into the biological significance of these concepts in body composition regulation, Henry *et al.* (1997) tested these hypotheses regarding inter-individual variability and intra-individual constancy of energy partitioning by assessing the P-ratio of weanling and adult rats during fasting (P-fast) and refeeding (P-refed). They concluded that:

- (a) their results in weanling and in adult rats, showing positive correlations between P-fast and P-refed, support the suggestion of Payne and Dugdale that particular P-ratio values are characteristic of individuals, and
- (b) their results for adult rats, showing that the P-fast and P-refed animals were not significantly different, are in agreement with the proposition of the Payne–Dugdale model concerning the intra-individual constancy of P-ratio.

Whereas their first conclusion about P-ratio as a characteristic of the individual is fully justified, their second conclusion that P-ratio is a constant is not substantiated by the data in the rat nor in human subjects. Our point of contention is elaborated below.

First, it is clear that when examining the inter-relationship between P-fast and P-refed, the effect of growth per se is a confounding variable in testing the hypothesis of intra-individual constancy in energy-partitioning between protein and fat. This is well demonstrated in their recent work in Sprague–Dawley rats, and summarized in Table 1. It can be seen that despite the fact that the P-fast values in the