

THE EFFECT OF SUPPLEMENTING WHOLEMEAL WHEAT
FLOUR WITH SPRAY-DRIED WHOLE-WHEY POWDER

R. T. HEYNEMAN^{1,2} and J. A. HOURIGAN¹

A number of reports have shown whey protein concentrates (WPC) to have high biological value and to be suitable for blending with cereal or other vegetable products to produce mixtures with desirable protein qualities (Craig 1979). Little work, however, has so far been conducted into the evaluation of whole whey and cereal blends. Such blends, if they were shown to be nutritionally beneficial, would have a number of advantages over WPC blends.

In this study, the protein qualities of blends of whole whey with wholemeal flour were evaluated in terms of the Protein Efficiency Ratio (PER). Specifically, wholemeal wheat flour was supplemented with whole whey, both non-demineralised and demineralised, at the 20 per cent level.

Weanling male Sprague Dawley rats (21 d old) were separately caged and fed diets containing approximately 10 per cent protein, ad libitum for 28 d. All diets contained a minimum of 8 per cent Sunflower oil, 4.5 per cent mineral mix and 1 per cent Roche vitamin mix. Weight gains and food intake were recorded and PER's calculated. These were compared with a diet containing skim-milk powder at the same level of substitution and a reference diet of sodium caseinate in cornflour with the abovementioned oil and vitamin additions.

Diet	No. of Rats	PER
0% Whey	4	1.1 ^a
20% Non-demineralised	4	2.3 ^b
20% Demineralised	8	2.6 ^b
20% Skim milk powder	4	2.8 ^b
Casein	5	2.7 ^b
Rat cubes (Allied Feeds)	4	1.2 ^a

a,b Values followed by different letters are significantly different from each other ($P < 0.01$).

The results show a significant difference between the supplemented and unsupplemented diets, and indicate that the protein quality of wholemeal wheat flour may be substantially improved by the addition of relatively small amounts of whole-whey powder. The nutritional advantages of whey protein can be obtained without the expense of processing whey into WPC.

Craig, T.W. (1979). *J. Dairy Sci.* 62: 1965.

¹ Food Technology Department, Hawkesbury Agricultural College, Richmond, NSW 2753
² Present address: Arnott's Biscuits Pty. Ltd., Homebush, NSW 2140