

VITAL

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NEWS, VIEWS & INFORMATION FOR NUTRITION PROFESSIONALS

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FEBRUARY

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Fransiska Hluschniow
NUTRITION COMMUNICATIONS
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Welcome to our first issue of *Vital* for 2008.

Since the launch of the CSIRO Total Wellbeing Diet, there has been growing interest in the use of higher protein diets in weight management. Although effective, there were some concerns that these diets may have adverse effects on bowel, renal and bone health. In this issue of *Vital* we share with you the results of a new study conducted by CSIRO Human Nutrition which investigates the short- and long-term impact of the higher protein, low fat diet in men.

We also report on exciting data presented by Professor Caryl Nowson at the recent Joint New Zealand & Australian Nutrition Societies Conference which challenges the common belief that red meat should be restricted in blood pressure-lowering diets.

In November, the World Cancer Research Fund (WCRF) and American Institute for Cancer Research (AICR) launched a report entitled *Food, nutrition, physical activity and the prevention of cancer: a global perspective*. We interviewed Professor Jim Mann, a member of the expert panel that compiled the WCRF/AICR report, to find out what he believes are the key priorities for cancer prevention.

Read all about two of our new resources: the revised and updated *Eating for Health* aimed at providing the public with practical shopping and cooking tips and the *Red Meat & Nutrition* website specifically designed for healthcare professionals. Make sure you register to the site before 31 March to be in the running to win a prize.

I hope you find this issue of *Vital* informative and I look forward to receiving your feedback and ideas for future issues.

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How safe is a high protein diet for weight loss?

Diets with higher protein levels have been proven effective for weight loss and improved metabolic outcomes in women, but there are very limited data available for men. At the Joint New Zealand & Australian Nutrition Societies Conference in Auckland in December 2007, Associate Professor Manny Noakes, Senior Dietitian and Research Scientist, CSIRO Human Nutrition, presented results from a recent study her team conducted, aimed at assessing the effect of a high protein, low fat diet on weight loss and metabolic parameters in overweight/obese men.



Associate Professor Manny Noakes,
SENIOR DIETITIAN AND RESEARCH SCIENTIST,
CSIRO HUMAN NUTRITION

High protein, low fat diets, such as the CSIRO Total Wellbeing diet, have produced impressive weight loss results for overweight Australians. However with increasing interest in the use of higher

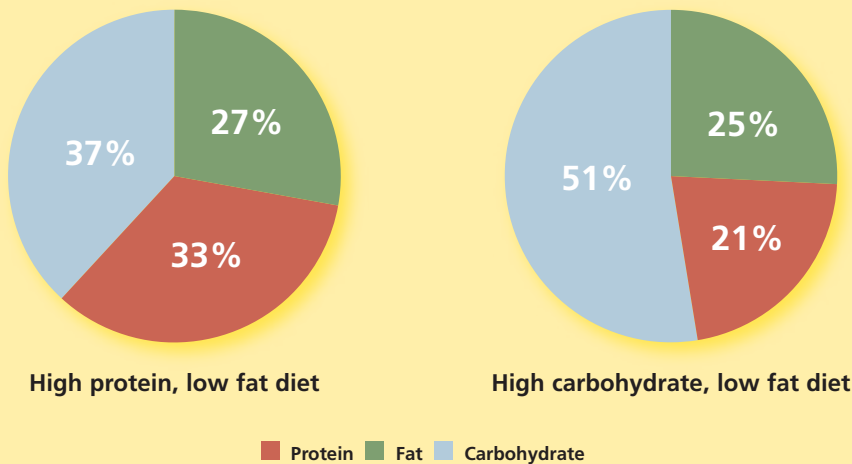
protein diets for weight management, there have been concerns around its short-term and long-term safety. Although controversial, higher protein diets have been suggested to have adverse effects on renal, bone and bowel health.

To assess the safety of a high protein, low fat weight loss diet, Dr Noakes conducted a study of 123 abdominally overweight or obese men over one year (110 men completed the trial at 12 weeks; 68 men completed the trial at 52 weeks).¹ The men were randomised to receive one of two diets with a similar amount of kilojoules.

Diet composition

	High protein, low fat diet (HP)	High carbohydrate, low fat diet (HC)
Cereal	50 g high fibre cereal	50 g high fibre cereal
Dairy (low-fat)	3 serves	1 serve
Lean meat, poultry and fish	400 g Red meat 300 g, 4 times a week	130 g Red meat 100 g, 1-2 times a week
Fresh fruit	300 g	450 g
Pasta, rice or potato	Nil	70 g (dry weight)
Low starch vegetables	At least 2.5 cups	At least 2.5 cups
Oil/spread	20 g	20 g
Wholegrain bread	105 g	140 g
Wine or equivalent (optional)	750 mL/week	750 mL/week

Macronutrient composition of diets



The aim of the study was to assess the effect of each diet on weight loss and body composition and metabolic factors, including bowel, renal and bone health markers.

Weight loss and body composition

Both the high carbohydrate and the high protein diets resulted in similar weight loss with an average reduction in bodyweight of 8.4 per cent by week 12, and 10.8 per cent by 52 weeks.

Although weight loss was similar, there were differences in body composition results. Dr Noakes said: "Abdominal fat is a key risk factor for men for a range of diseases, including colorectal and other cancers and we found that the higher protein diet was more effective at reducing abdominal fat levels."

"For men who are trying to lose weight, moderate amounts of lean red meat and other protein sources may be eaten as part of a balanced eating plan."

Bowel health

There are concerns over the safety of higher protein-red meat diets in relation to bowel health. This is because epidemiological studies have indicated that higher intakes of red meat show a small increase in relative risk (RR 1.28) for colorectal cancer.² However, when such patterns are controlled for dietary fibre or fish intake, significance is lost, suggesting that the total dietary pattern is more important than single food items.³ The inclusion of weight management in such a pattern is likely to further decrease risk.

Dr Michael Fenech, Principal Research Scientist with CSIRO Human Nutrition collaborated

with Dr Noakes to investigate the long-term impact of the higher protein-red meat diet on bowel health. They found that after 52 weeks, there were no significant differences in several biomarkers of bowel health between the higher protein diet (which included 300 g of lean red meat, four times a week) and the high carbohydrate diet.

One of the bowel health markers assessed in the study was telomere length in rectal tissue cells, which is a key measure of DNA damage. Dr Fenech, who has a Doctorate in Genetic Toxicology, said: "Shortened telomeres are associated with increased risk for the initiation of many carcinomas such as those of the colo-rectum, pancreas, bone, lung, bladder and kidney. Telomere length was increased on both diets and correlated with weight loss. These preliminary data suggest that weight loss may contribute to the prevention of telomere shortening, an important event in carcinogenesis."

Therefore the study suggests that weight loss itself may be beneficial for cancer prevention and that the risk of cancer could be reduced as a result of weight loss, more so than the effect of individual foods consumed.

Bone health

Higher protein diets tend to be acid-producing and are thought to have an adverse effect on bone density. To examine the effect of a high intake of protein on bone health, Dr Noakes measured the men's bone mineral density and the amount of calcium excreted. At 52 weeks, Dr Noakes did not find any adverse effects of the high protein diet on bone health with a decrease in calcium excretion observed on both diets, and bone mineral density decreasing less in the high protein group compared to the high carbohydrate group ($P < 0.05$).

Renal health

One concern about a high protein diet is that the kidneys may become overloaded when trying to process high levels of protein, so the study examined a key measure of kidney health – creatinine clearance rates. The study found that creatinine clearance declined on both diets at week 12. However, by week 52, the rate was no different from baseline, indicating that the high protein diet was as safe as the high carbohydrate diet in terms of kidney health for those with normal kidney function.

"The high protein diet was more effective in improving body composition in men than the high carbohydrate diet."

What does this mean for men who need to lose weight?

Dr Noakes said: "The high protein diet was more effective in improving body composition in men than the high carbohydrate diet, and we observed no short- or long-term adverse effects on bowel health, renal function or bone health. So for men who are trying to lose weight, moderate amounts of lean red meat and other protein sources may be eaten as part of a balanced eating plan."

Key points

- A one-year study of 123 overweight/obese men found that an experimental high protein diet containing 300 g of red meat four times a week was as safe and effective as a high carbohydrate diet that included less than 100 g red meat per week.
- The men lost similar amounts of weight on each diet, but the high protein diet was more effective in reducing abdominal fat without loss of lean mass.
- In terms of safety, there were no significant differences between the two diets – the positive impact on bowel health markers was due to weight loss and the high fibre content of both diets, with no short- or long-term adverse effects on markers of renal function or bone health.

References:

1. Noakes M *et al.* (2007), 'Bowel, renal and bone health markers during weight loss on a high protein high red meat diet compared to an isocaloric high carbohydrate diet in overweight/obese men at 1 year,' *Asia Pacific Journal of Clinical Nutrition*, 16 (Suppl 3): S46.
2. Larsson SC *et al.* (2006), 'Meat consumption and risk of colorectal cancer: a meta-analysis of prospective studies,' *International Journal of Cancer*, 119(11):2657-2664.
3. Norat T *et al.* (2005), 'Meat, fish, and colorectal cancer risk: The European Prospective Investigation into Cancer and Nutrition,' *Journal of the National Cancer Institute*, 97(12): 906-16.

Modifying the DASH diet

Research has shown that diets low in saturated fat and high in fruit, vegetables and dairy products are effective in lowering blood pressure.¹ This dietary approach to stop hypertension (DASH) restricts the intake of red meat to a maximum of three serves per week, based on epidemiological evidence that shows vegetarians have lower blood pressure than omnivores. However, a recent intervention study, conducted by Dr Jonathan Hodgson (reported in Vital 30, January 2006) found blood pressure was lowered when dietary protein was increased through increased consumption of lean red meat.² Therefore it begs the question should red meat be restricted in blood pressure-lowering diets?



Caryl Nowson,
PROFESSOR OF
NUTRITION AND AGEING,
DEAKIN UNIVERSITY

To find out Professor Caryl Nowson and a team from the Centre for Physical Activity and Nutrition Research School of Exercise and Nutrition Sciences at Deakin University assessed the effect of a low-sodium, modified-DASH diet, including six serves of lean red meat per week, on blood pressure. The results were presented at the Joint New Zealand & Australian Nutrition Societies Conference in Auckland in December 2007.

Professor Nowson assessed the blood pressure-lowering effect of two diets in 95 post-menopausal women with high/normal blood pressure. The women, aged 45-60 years, received one of two diets for 14 weeks:³

1. A high carbohydrate, low fat diet (HC) – including at least two vegetarian days per week.
2. A low-sodium, modified-DASH diet

(MOZDASH) – including lean red meat on most days of the week (six serves of approximately 100 g cooked weight).

“A low-sodium modified DASH-style diet including six serves of lean red meat per week effectively reduces blood pressure in post-menopausal women.”

Changes in blood pressure

Both diet groups experienced a fall in blood pressure, but the fall in systolic blood pressure tended to be 3 mmHg greater in the low-sodium modified DASH diet (MOZDASH) group than the high carbohydrate, low fat diet (HC) group. This blood pressure-lowering effect was even greater in those taking antihypertensive medication, with a 6/4 mmHg greater reduction observed in the MOZDASH group.

Professor Nowson said: “We found that a low-sodium DASH-style diet including six serves of lean red meat per week effectively reduced blood pressure in post-menopausal women, especially those taking antihypertensive medication. Therefore, there is no reason to restrict red meat on a DASH diet to reduce blood pressure.”

Effect on weight

Both groups experienced a small reduction in bodyweight with the women on the MOZDASH diet losing an average of 1.2 kg and those on the HC diet losing an average of 0.8 kg. Professor Nowson said: “Weight loss was positively associated with blood pressure reduction across both diet groups.”

Lowering blood pressure

This study has shown that a low-sodium DASH type dietary pattern with the inclusion of lean red meat was effective in reducing blood pressure in post-menopausal women, particularly in those taking antihypertensive medication. This dietary pattern could be recommended for this group who are at increased risk of cardiovascular disease.

Key points

- Traditional DASH diets restrict the intake of red meat, making them difficult for people to comply.
- A low-sodium modified DASH-style diet that included red meat on most days of the week resulted in a 3 mmHg greater fall in systolic blood pressure, in post-menopausal women, compared with the high carbohydrate, low fat diet.
- In women taking antihypertensive medication, the difference was even more significant – the modified DASH diet resulted in an average greater fall of systolic blood pressure of 6 mmHg and diastolic blood pressure of 4 mmHg compared with the high carbohydrate, low fat diet.

References:

1. Appel L et al, (1997), ‘A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group,’ *New England Journal of Medicine*, 336(16): 1117-24.
2. Hodgson JM et al, (2006), ‘Partial substitution of carbohydrate intake with protein intake from lean red meat lowers blood pressure in hypertensive persons,’ *American Journal of Clinical Nutrition*, 83(4): 780-87.
3. Nowson C et al, (2007), ‘Effect of a low sodium, DASH diet, including red meat, on blood pressure in postmenopausal women,’ *Asia Pacific Journal of Clinical Nutrition*, 16 (Suppl 3): S53.

Diet composition

	Low-sodium modified DASH diet (MOZDASH)	High carbohydrate, low fat diet (HC)
Lean red meat (1 serve = 135 g raw, 100 g cooked)	> 6 serves/week	<2 serves/week
Fruit (including juice)	> 4 serves/day	~ 2 serves/day
Vegetables	> 4 serves/day	~ 2-3 serves/day
Bread and cereals	< 4 serves/day	>4 serves/day
Fats and oils	> 4 tsp/day	> 4-8 tsp/day
Low-fat dairy	At least 2-3 serves	At least 2-3 serves
Sodium	60-70 mmol/day	n/a
Vegetarian days	n/a	At least 2 days/week

Does limiting red meat help us avoid cancer?

Australians may have been alarmed by the November 2007 release of a cancer-prevention report by the World Cancer Research Fund and American Institute for Cancer Research (WCRF/AICR), which recommended limiting intake of red meat and avoiding processed meat. But what is the evidence for the link between cancer and red meat, and what is the real impact of this recommendation on the Australian diet?

The report, *Food, Nutrition, Physical Activity and the Prevention of Cancer: a Global Perspective*, made 10 recommendations to help prevent cancer, one of which was to “limit intake of red meat and avoid processed meat”.¹

But what is the evidence for the link between colorectal cancer and red meat consumption? Professor Peter Baghurst from the School of Public Health, University of Adelaide, and the Public Health Research Unit, Women’s and Children’s Hospital, Children Youth and Women’s Health Service Adelaide, South Australia, conducted a review of the literature relating to red meat and colorectal cancer, including several meta-analyses of cohort studies.²

Overall, Professor Baghurst found that among published meta-analyses, “...the relative risk of colorectal cancer in the top 25 per cent of red meat consumers is 1.3 compared with the lowest 25 per cent...” He also found that a very large pooled analysis of cohort studies conducted by the Pooling Project at Harvard University reported no excess risk of colorectal cancer associated with high red meat consumption. While reluctant to say there was no causal link between red meat consumption and colorectal cancer, Professor Baghurst concludes: that: “... the association between red meat and colorectal cancer is relatively weak.”

“the association between red meat and colorectal cancer is relatively weak.”

Effect on the Australian diet

The global report recommends a weekly red meat consumption of less than 500 grams cooked weight (700-750 grams raw weight).

A reanalysis of the National Nutrition Survey found that the average Australian consumes only 460 grams of fresh red meat each

week³ and tends to eat red meat with plenty of vegetables, and as part of a varied diet. Also Australians generally eat red meat lean, either purchased already trimmed of fat or trimmed at home.⁴

Advice for Australians

Jim Mann, Professor of Human Nutrition and Medicine at Otago University, New Zealand, is a key member of the expert panel that compiled the WCRF/AICR report. According to Professor Mann, a balanced approach that addresses smoking, obesity and lack of physical activity would be more effective for cancer prevention than focusing on a particular food group.

‘According to Professor Mann, a balanced approach that addresses smoking, obesity and lack of physical activity would be more effective for cancer prevention than focusing on a particular food group.’

“Attempts to incriminate a single food are likely to lead to inappropriate diets, diets which will not necessarily protect against cancer, and diets which will not necessarily improve the health of the nation generally. Obesity and lack of physical activity increase the risk of a whole range of cancers, including some of the commonest cancers we know. Reducing the incidence and prevalence of obesity is an absolutely critical factor in cancer risk reduction,” Professor Mann says.

Benefits of red meat

For the average Australian diet, lean red meat is a dense source of key nutrients.³ It provides:

- 20% of daily protein
- 52% of haem iron
- 27% of zinc
- 24% of vitamin B12
- 28% long-chain omega-3 fatty acids
- but only 8% of the total fat intake.

“Attempts to incriminate a single food are likely to lead to inappropriate diets, diets which will not necessarily protect against cancer, and diets which will not necessarily improve the health of the nation generally.”

Professor Mann advises that the best protection against cancer requires a balanced eating pattern, including a variety of fruit, vegetables and other foods high in fibre, combined with regular physical activity to promote a healthy bodyweight. And lean red meat is an important inclusion. “To the best of my knowledge, and to the best of anyone’s knowledge, there is no evidence that moderate intakes of red meat cause any harm in terms of cancer... Indeed, red meat is an excellent source of a whole range of proteins and essential nutrients.”

References:

1. World Cancer Research Fund/American Institute for Cancer Research, *Food, nutrition, physical activity and the prevention of cancer: a global perspective*. Washington DC: AICR, 2007.
2. Baghurst PA, (2007), ‘Colorectal cancer,’ *Nutrition & Dietetics*; 64(Suppl 4):S173-80.
3. Record S et al (1999), ‘Red meat consumption – results from the 1995/6 National Nutrition Survey,’ CSIRO Health Sciences and Nutrition, commissioned by Meat & Livestock Australia.
4. The Clever Stuff. *Meat Expectations Study* (2007).



Eating for Health now revised and updated

The third edition of Eating for Health – an easy guide to shopping and cooking healthy meals – is now available for you to distribute to your patients.

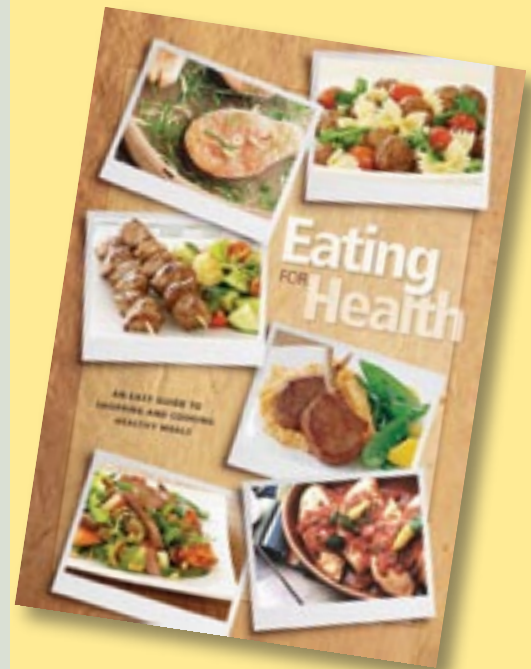
Eating for Health is an eight-page full-colour brochure designed to provide practical advice and tips on healthy shopping and cooking for people with heart problems, or those who want to keep their weight under control or simply want to enjoy a healthy diet.

The latest edition has been fully revised and updated, and it includes the latest facts about fats, along with a practical scale that provides the fat content of certain foods, and a handy shopping list with healthy living tips to help your patients make healthier choices.

A range of lean red meat recipes have been included, including simple roasts, exotic casseroles, easy stir fries and barbecue suggestions, along with handy butcher's tips for choosing the right cut to suit each recipe.

For those who want a quick meal, the brochure also provides some suggestions for healthy fast foods that can be whipped up in less time than it takes to pick up a take-away.

Eating for Health has been endorsed by the Dietitians Association of Australia and the National Health Foundation of Australia Tick Program.

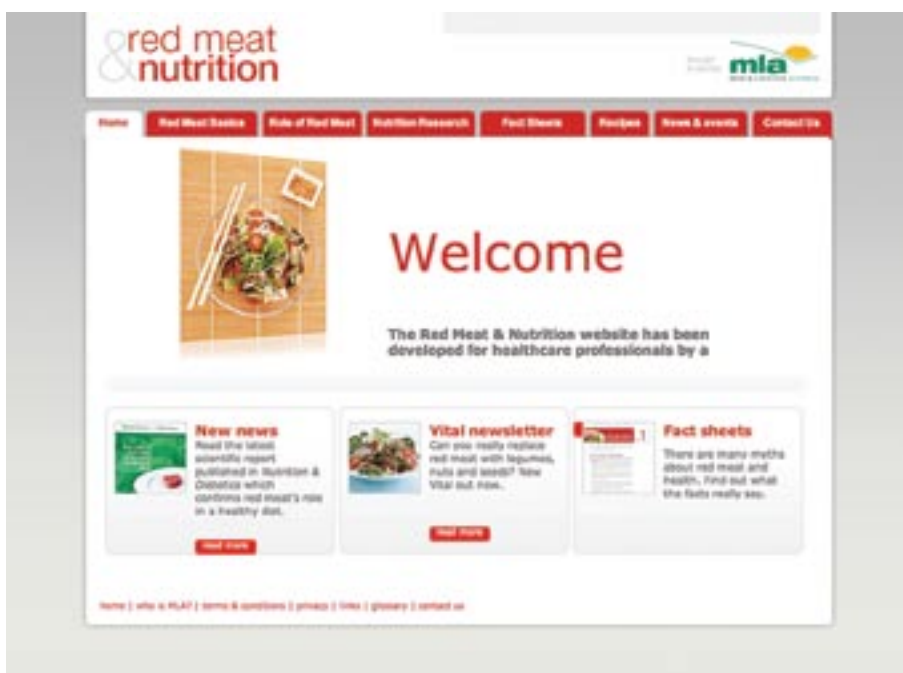


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Designed specifically for health professionals by health professionals, www.redmeatandnutrition.com.au is the latest online resource for nutrition research, news, events, patient resources, recipes and newsletters.



The Red Meat & Nutrition website has been developed by a team of qualified dietitians and nutritionists to allow health professionals easy access to a host of relevant information about lean red meat and the Australian diet.

You can read the latest nutrition news and download important nutrition research, such as *The Role of Red Meat in Healthy Australian Diets*, available as a summary or as a full report. This research was published

as a supplement in *Nutrition & Dietetics* in September 2007. Selected published research from previous years is also available for download.

The site also provides information on the various cuts of beef, lamb and veal with tips on how best to cook them, along with comprehensive data tables on the nutrient composition of each cut. A handy recipe section and guidelines on cooking techniques offer practical suggestions to help your patients include lean red meat in their diet.

To learn more about the science behind red meat's role in the Australian diet, and to help keep your patients well-informed, you can also download a series of handy fact sheets, or view previous issues of Vital newsletters.

The Red Meat & Nutrition website is freely available to Australian health professionals at www.redmeatandnutrition.com.au

Register and win!

Go to www.redmeatandnutrition.com.au and enter our competition to win one of 20 Arcosteel Knife Block Sets by telling us in 25 words or less how we can improve our new website.