Nutritional benefits of Australian red meat

MEAT & LIVESTOCK AUSTRALIA

Introduction

This report provides key stakeholders with directions on nutrition communications about the nutritional value of Australian red meat.

Key industry and public health stakeholders provide consumers with nutrition information about Australian red meat in different settings.

To inform consumers' choices, it is important the nutrition information is:
- Representative of meat available for purchase;
- Typical of meat consumption practices; and
- Consistent with recommendations in the *Australian Dietary Guidelines*.

Providing nutrition information in line with *Australian Dietary Guidelines* helps consumers to:
- Eat a nutritionally adequate diet;
- Achieve and maintain a healthy weight; and
- Reduce the environmental footprint from overconsumption and household food waste[1,2,3]

The nutrition information described in this report will help key stakeholders to inform consumers' Australian red meat choices in line with *Australian Dietary Guidelines* by providing guidance on serving size, level of trim, and type of meat choice.

OUR APPROACH

1 The information provided in this report was derived from the *Review of the Nutrient Composition of Australian Red Meat*[4] conducted by MLA and published on the MLA Healthy Meals website.

2 The review considered the influence of a wide range of factors on the nutritional value of Australian red meat, including:
- The nutrient content of Australian red meat available for purchase;
- Consumer consumption habits; and
- Australian production practices

3 Key findings from the review were considered within the context of making nutrition information easier for consumers to eat Australian red meat in line with the recommendations in the *Australian Dietary Guidelines*.

Executive summary

This report suggests adopting a practical approach to describe the nutritional benefits of Australian red meat.

The serving size, level of trim and type of meat recommended is consistent with how Australian red meat is typically consumed.

This practical approach makes it easier for consumers to eat lean red meat in amounts recommended in the *Australian Dietary Guidelines*.

PRACTICAL SERVING SIZE

150 g three to four times a week is practical

- Purchase weight in raw weight is a practical way to describe serving sizes
- 150 g raw weight is practical way to describe the nutritional benefits of a serving of Australian red meat
- Three to four healthy, balanced meals a week is a practical way to provide guidance on recommended amounts

POPULAR LEAN CUTS

Australian red meat is typically consumed lean

- Levels of marbling are generally low in red meat produced in Australia
- Lean cuts are widely available for purchase in retail settings
- Almost 75% of Australian red meat is eaten lean and semi-trimmed, with 65% consumed lean

SIMILAR NUTRITIONAL BENEFITS

Different choices have similar nutritional benefits

- When trimmed of separable fat, the nutrient content of cuts derived from the hind-, loin and forequarter are similar
- No differences in nutritional benefits by type of red meat - beef, veal, lamb, mutton or goat meat
- A serving of Australian red meat provides 12 essential nutrients recommended for good health

Practical serving size

150 g raw weight three to four times a week is practical

Raw weight, a practical guide

Purchase weight by number of serves is a practical way to describe serving sizes

- Purchase weight (in grams and raw weight) by number of serves is the way main meal preparers conceptualize serving size because it is the way meals are planned and it is consistent with how amounts of ingredients are described in recipes[5,6].
- MLA's research on popular meals and practices suggests 100 to 200 g (raw weight) per serve is how consumers decide how much red meat to purchase[5,6].
- Median portion sizes for meals prepared using mince and steaks were consistent with typical purchase weights. For example, mince is typically sold in 500 g packages and is generally used to serve four people. Similarly, the purchase weight of chops and steaks are generally around 100 g or 200 g, raw weight.

Purchase weight – a practical guide

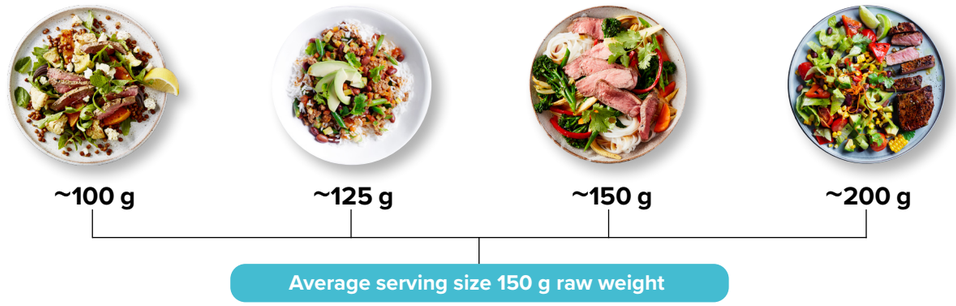
150 g, a practical serving size

150 g (raw weight) is a practical way to describe number of serves

- The findings from MLA's *Typical Recipes Study*[5] and a secondary analysis of meal composition in the *ABS National Nutrition and Physical Activity Survey*[7] suggest type of meal is the main determinant of serving size.
- The median serving size reported in MLA's *Typical Recipes Study*[5] for twelve most popular meals prepared by a representative sample of main meal preparers (n=884) was similar for beef and lamb.
- Different meat cuts were used to prepare the same type of meal. For example, beef strips, rump or blade steak and lamb leg were used to prepare stir-fry meals. Beef strips were also used to prepare soups, salads, sandwiches; while blade was prepared as roast, and steaks were used to prepare slow cooked meals and soups.

150 g, a practical serving size

Four most common serving sizes

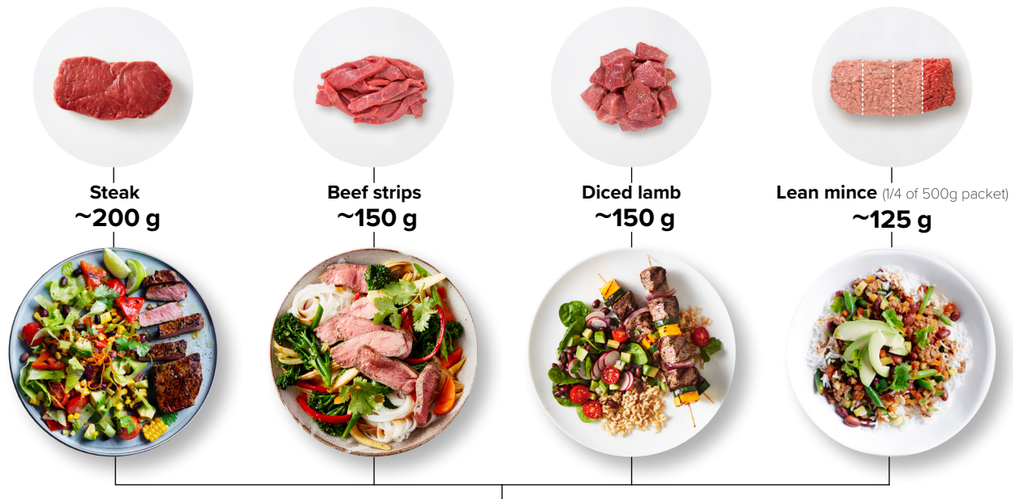


Three to four times a week, a practical recommendation

Three to four healthy, balanced meals a week is a practical way to provide guidance on recommended amounts

- The *Australian Dietary Guidelines* recommend 455 g of cooked lean red meat per week[3]. Red meat refers to beef, lamb, veal, pork, goat, kangaroo and game meats[3].
- The equivalent weekly amount is 650 g raw weight based on a moisture loss of about 30%[3,4]. Other than moisture loss and subsequent changes in portion size, the impact of cooking on the nutrient content of Australian red meat is small[4].
- The *Australian Dietary Guidelines* recommends adopting a practical approach to accommodate the different ways red meat is consumed over the week. An average 150 g serving size consumed three to four times a week is consistent with how Australian red meat is typically consumed and equivalent to recommended amounts[3,6,8,9].

Australian Dietary Guidelines in practice



Popular lean cuts

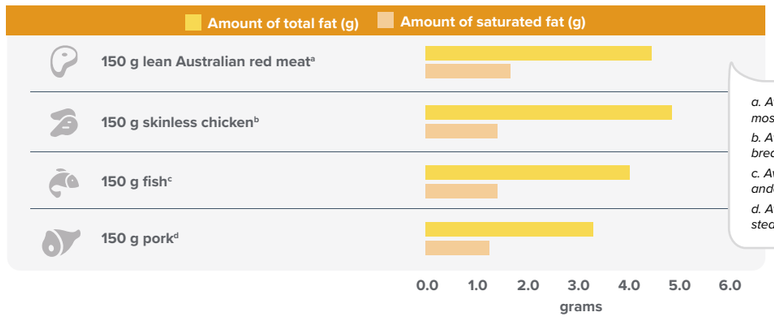
Australian red meat is typically consumed lean

Low levels of marbling

Levels of marbling are generally low in Australian red meat

- Australian red meat production is predominantly grass-fed and meat with higher levels of marbling are limited to niche markets only.
- The level of marbling and amount of separable fat is mainly determined by the feeding regime, where heavier, well fed animals tend to have higher levels of marbling[10-12]. Whilst some breeds, such as Wagyu, accumulate more fat intramuscularly compared to other breeds[10,11], the level of marbling is largely determined by the type of feeding regime.
- Marbling tends to be low in Australian beef where grain-feeding is on average between 80 to 100 days[4]. Grain feeding which involves 300 days or longer represents a small percentage of overall production.
- Within the context of retail settings, differences in marbling and average levels of saturated (38%), monounsaturated (39%) and polyunsaturated fats (10%) in Australian red meat is within the expected range of natural variability[4,13].

Fat content of popular proteins



a. Average values for 150g serving of the three most popular cuts of raw lean beef, lamb and goat.
b. Average values for150g serving of raw chicken breast, thigh and drumstick.
c. Average values for 150g serving of raw white fish andcanned, drained tuna.
d. Average values for 150g serving of raw pork leg steak, shoulder roast and medallion.

Lean red meat is widely available

Lean cuts are widely available for purchase in retail settings

- There is wide variability in the amount and location of separable fat both between different retail cuts and even within the same cut.
- The location and amount of separable fat is largely determined by butchering practices. Specific cuts, such as fillet steak (eye fillet or tenderloin) have no selvedge or intermuscular fat, whereas sirloin steak (porterhouse or New York steak) has only selvedge fat, and rump steak has both intermuscular and selvedge fat.

Lean red meat is widely available

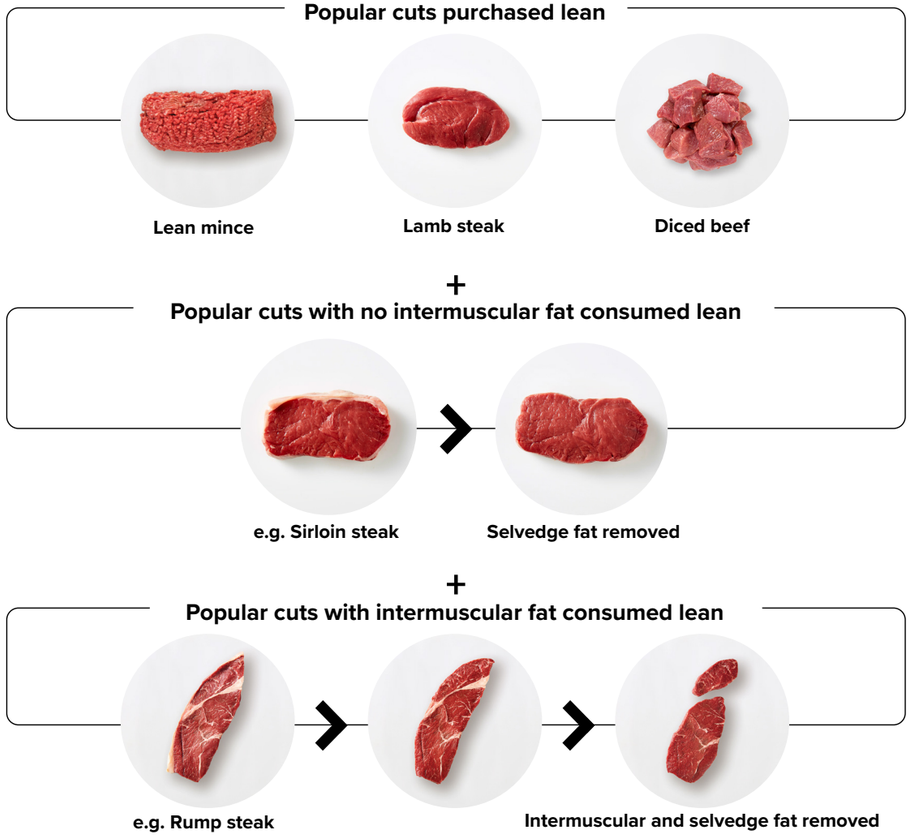
- As the amount of separable fat increases, the energy, fat and fatty acid content increases while the protein, iron and zinc content remain largely unchanged[4,13].
- There has been a trend towards greater availability of lean cuts[14]. For example, the width of selvedge fat on retail cuts has decreased and almost half of beef mince available for purchase contains less than 5% fat[15,16].
- Retail studies have consistently reported little differences in the type of meat and cuts available for purchase according to state, region or suburbs based on socio-economic status[15, 17, 18].

Consumed lean

Almost 75% of Australian red meat is eaten lean and semi-trimmed, with 65% consumed lean

- The most popular cuts are diced meat, strips and mince which are typically purchased lean[5]. Other cuts purchased lean include steak medallions, eye fillet and gravy beef.
- In addition, more than two thirds of cuts with no intermuscular fat are eaten lean following the removal of selvedge fat (e.g. sirloin steak and lamb loin chops).
- While majority of cuts with intermuscular and selvedge fat, such as rump and blade steaks, are eaten lean.
- The findings suggest most Australian red meat is eaten lean[4,5]. Cuts purchased lean or with only selvedge fat are more likely to be consumed lean compared to those cuts with intermuscular fat[5].

Australian red meat is mainly consumed lean and semi-trimmed



Similar nutritional benefits

Different choices have similar nutritional benefits

Type of meat

No differences in nutritional benefits by choice of red meat

- Beef, veal, lamb, mutton and goat meat are all a source of 12 essential nutrients[13].
- Findings from agricultural studies suggest that within the context of Australian red meat production systems, the influence of breed and feeding regime on the nutrient content of Australian red meat is small[4,19-21].
- Since Australian red meat is predominantly grass-fed, the omega-3 of different types of Australian red meat is within the expected range of natural variability[4].
- Ruminant animals convert alpha-linolenic acid (ALA) in grasses into long-chain omega-3 fatty acids and the natural variability of the ALA content of grass explains differences in the omega-3 content of red meat rather than the number of days on grain-feeding[19-20,22-24].

Type of cut

No differences in nutritional benefits by choice of cut

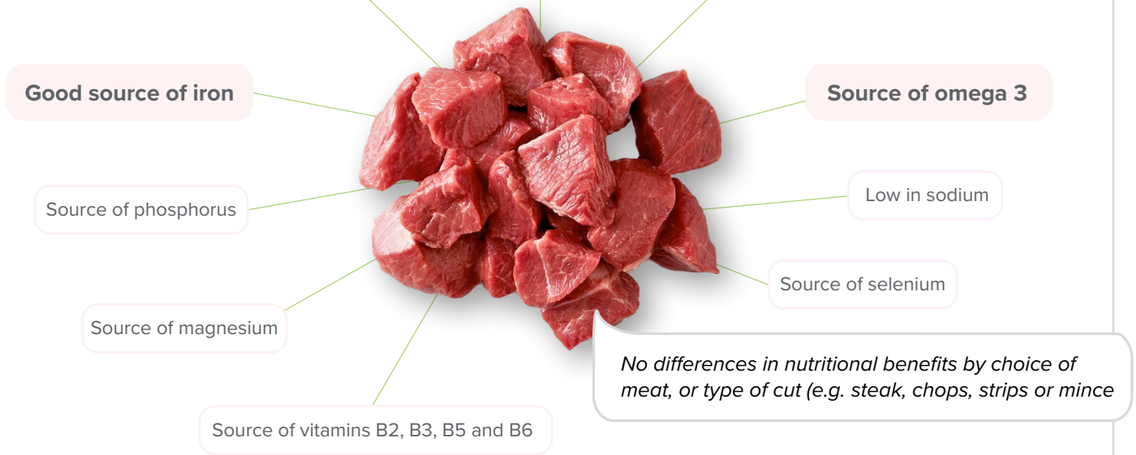
- Popular cuts available for purchase are prepared from the hind-, loin and forequarter and include steak, chops, roast, strips, diced meat, and mince[4].
- When trimmed of all separable fat, differences in the nutrient content between cuts are within the expected range of natural variability[4], suggesting type of cut is not a major determinant of the nutrient content of lean Australian red meat.
- An average of lean cuts prepared from the hind-, loin and forequarter is representative as there is little difference between the nutritional content of popular cuts[4].
- A detailed examination of the available data suggests the nutrient content of Australian red meat has remained stable over time[4].

Nutritional benefits

A serving of Australian red meat provides 12 essential nutrients recommended for good health

- A 150 g serving (raw weight) of lean Australian red meat provides 12 essential nutrients important for normal growth and development, cognitive function, muscle health and wellbeing[3,13].
- Australian beef is an important source of high-quality protein, providing 33 g per 150 g serving (raw weight) and all the essential amino acids needed for muscle health and normal growth and development.
- The amount of bioavailable iron and zinc found in Australian red meat is higher compared to other popular protein sources, making it easier to achieve adequate intakes of these critical nutrients important for a healthy immune system and wellbeing[3,25].
- Naturally low in sodium, when trimmed of separable fat, a 150 g serving of Australian red meat provides 730 kJ (174 kcal), similar in energy content a serving of skinless chicken[13].
- Australian red meat is a source of omega-3 and contributes 12% of omega-3 intake in the Australian diet[7].

Key nutrients per 150 g serving size



No differences in nutritional benefits by choice of meat, or type of cut (e.g. steak, chops, strips or mince

Conclusion

The findings in this report suggests the following nutrition information is representative of Australian red meat consumption and is consistent with the *Australian Dietary Guidelines*.

The report highlights the benefit of providing consumers with nutrition information that represents typical consumption practices, including typical serving size, level of trim and popular cuts.

The findings suggest that the following nutrition information is representative of both Australian red meat consumption and is in line with the *Australian Dietary Guidelines*:

- The typical serving size of Australian red meat is determined by the type of meal consumed and 150 g raw weight represents the average of the four most common serving sizes.
- Describing serving size in raw weight provides consumers with a practical guide to purchasing recommended amounts of Australian red meat for popular meals typically consumed three to four times a week.
- Lean meat is representative of how Australian red meat is typically consumed and is consistent with Australian Dietary Guidelines. Popular cuts are either purchased lean or trimmed prior to consumption. Most meat is consumed lean (65%) or semi-trimmed (15%).
- An average of popular cuts prepared form the hind-, loin, and forequarter is representative of the nutritional value of Australian red meat available for purchase. A detailed analysis suggests differences between cuts is within expected range of natural variability.
- Within the context of Australia's predominantly grass-fed production system, the impact of production practices, including breed and breeding practices, feeding regime and region of production is small.

The report was informed by the Review of the nutrient composition of Australian red meat which suggested data currently available in the Australian Food Composition Database is extensive and the nutritional value of lean Australian red meat is stable.

Since level of trim and serving size are key determinants of the nutritional content of Australian red meat for both marketing and public health purposes, the review recommended MLA continue to monitor typical consumption practices through MLA's Typical Recipes Study.

References

1. Meat and Livestock Australia. *Environmental impact of red meat in a healthy diet*. Sydney (NSW): MLA; 2021. Available at: environmental-impact-of-red-meat-in-a-healthy-diet.pdf (mlahealthymeals.com.au)
2. Meat and Livestock Australia. *Sustainable consumption of Australian red meat in a healthy diet.* Sydney (NSW): MLA; 2022. Available at: mla_healthy-diet-report_final.pdf www.mlahealthymeals.com.au
3. National Health and Medical Research Council. *Australian Dietary Guidelines*. Canberra (ACT): NHMRC; 2013. Available at: www.nhmrc.gov.au/adg
4. Meat and Livestock Australia. *Review of the nutrient composition of Australian red meat.* Sydney (NSW): MLA; 2022. Available at: review-of-the-nutritional-value-of-australian-red-meat.final.oct22.pdf (mlahealthymeals.com.au)
5. Meat and Livestock Australia. *MLA Healthy Meals Report*. Sydney (NSW): MLA; 2020. Available at: healthy-meals-report.pdf (mlahealthymeals.com.au)
6. Meat and Livestock Australia. *MLA What's Cooking Report*. Sydney (NSW): MLA; 2013. Available at: whats-cooking-final-report_7-6-13.pdf (mlahealthymeals.com.au)
7. Sui Z, Raubenheimer D and Rangan A (2017b) Consumption patterns of meat, poultry, and fish after disaggregation of mixed dishes: secondary analysis of the Australian National Nutrition and Physical Activity Survey 2011–12. *BMC Nutr* **3**:52.
8. Sui Z, Raubenheimer D, Cunningham J and Rangan A (2016) Changes in meat/poultry/fish consumption in Australia: From 1995 to 2011–2012. *Nutrients* **8**:753.
9. Sui Z, Raubenheimer D and Rangan A (2017) Exploratory analysis of meal composition in Australia: Meat and accompanying foods. *Public Health Nutr* **20**:2157-2165.
10. Laurie, RA (1991) Meat Science, 5th ed., Oxford: Pergamon Press.
11. Schenkel FS, Miller SP and Wilton JW (2004) Genetic parameters and breed differences for feed efficiency, growth, and body composition traits of young beef bulls. *Can J Anim Sci* **84**:177–185.
12. Warren HE, Scollan N, Enser M, Hughes SI, Richardson I and Wood J (2008) Effects of breed and a concentrate or grass silage diet on beef quality in cattle of 3 ages. I: Animal performance, carcass quality and muscle fatty acid composition. *Meat Sci* **78**: 256-269.
13. Food Standards Australia New Zealand (2019) *Australian Food Composition Database*. Canberra: FSANZ. Available at: Australian Food Composition Database (foodstandards.gov.au)
14. Williams PG and Droulez V (2010) Australian red meat consumption: predominantly lean in response to public health and consumer demand. *Food Aust* **62**:87-94.
15. Fayet-Moore F, Cunningham J, Stobaus T and Droulez V (2014) Fat content and composition in retail samples of Australian beef mince. *Nutrients* **6**:2217-28.
16. Williams PG, Droulez V, Levy G and Stobaus T (2006) Composition of Australian red meat 2002. 1. Gross composition. *Food Aust* **58**:173-181.
17. Cobiac L, Droulez V, Leppard P and Lewis J (2003) Use of external fat width to describe beef and lamb cuts in food composition tables. *J Food Compost Anal* **16**:133-145.
18. Food Standards Australia New Zealand (2006) *The pilot Australian children's key foods program 2006.* Available at: 2006 KFP Report.doc (foodstandards.gov.au)
19. Ponnampalam E, Butler K, Pearce KM, Mortimer SI, Pethick DW, Ball AJ and Hopkins D (2014a) Sources of variation of health claimable long chain omega-3 fatty acids in meat from Australian lambs slaughtered at different weights. *Meat Sci* **96**:1095-1103.
20. Ponnampalam E, Butler K, Jacob R, Pethick DW, Ball A, Hocking Edwards J, Geesink G and Hopkins D (2014b) Health beneficial long chain omega-3 fatty acid levels in Australian lamb managed under extensive finishing systems. *Meat Sci* **96**:1104-1110.
21. Liu J, Greenfield H, Strobel N and Fraser DR (2013) The influence of latitude on the concentration of vitamin D3 and 25-hydroxy-vitamin D3 in Australian red meat. *Food Chem* **140**:432-435.
22. Mann NJ, Ponnampalam EN, Yep Y and Sinclair AJ (2003) Feeding regimes affect fatty acid composition in Australian beef cattle. *Asia Pac J Clin Nutr* **12**:S38.
23. Ponnampalam EN, Mann NJ and Sinclair AJ (2006) Effect of feeding systems on omega-3 fatty acids, conjugated linoleic acid and trans fatty acids in Australian beef cuts: potential impact on human health. *Asia Pac J Clin Nutr* **15**:21-29.
24. Sinclair A and O'Dea K (1987) The lipid levels and fatty acid compositions of the lean portions of Australian beef and lamb. *Food Techol Aust* **39**:228-231.
25. National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health (2006) *Nutrient Reference Values for Australia and New Zealand*. Canberra: Nutrient Reference Values | for Australia and New Zealand (nrv.gov.au)

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