# YOU & DAIRY PROTEIN

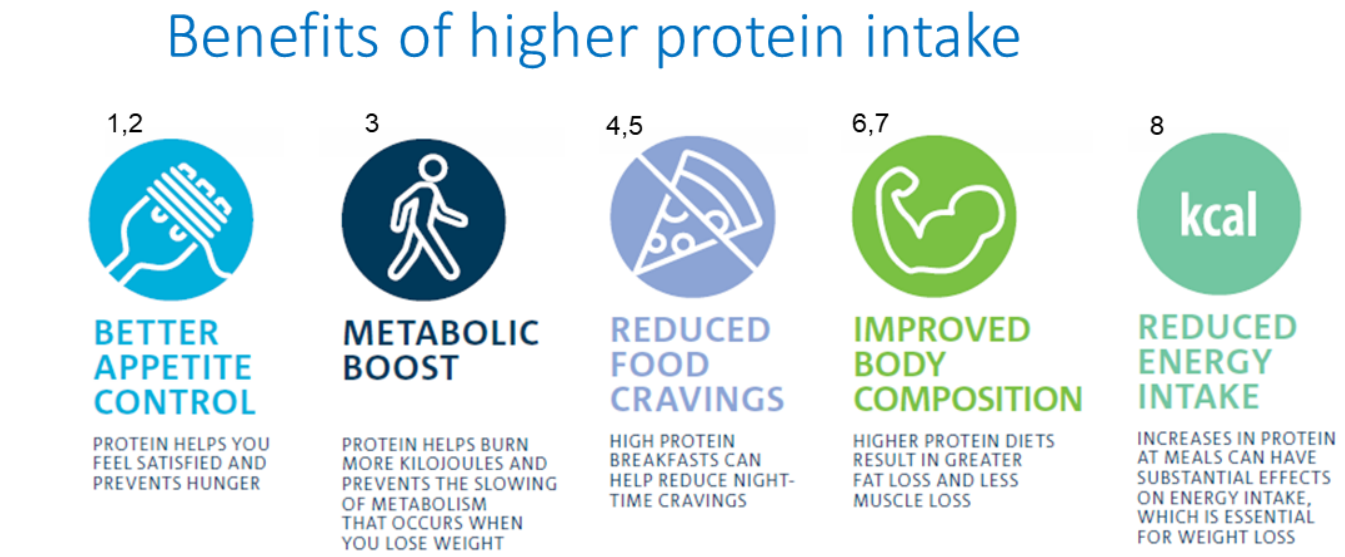

Fonterra
Dairy for life

# PROTEIN

In the topsy-turvy world of food trends, protein doesn't need any hype, for one simple reason – your body will not function properly without it.

Protein is found in nearly every part or tissue of your body — in muscle, bone, skin, hair and organs. Your body uses it to build and repair tissue and to make enzymes, hormones and other chemicals. This means it has a key role in building bones, muscles, cartilage, skin and blood. At least 10,000 different proteins make you what you are and keep you that way.

There are numerous benefits of the right amount of protein in our diets. It helps you feel fuller, helps with muscle and body condition and can help you maintain a healthy weight. However, a lack of protein can cause a variety of health problems including stunted growth in children, and loss of muscle mass. These problems are more likely to occur in developing countries due to food supply issues.  By contrast, in developed countries the availability of plant and animal-based foods provides a wide range and choice of protein sources.




[1]Bowen J, Noakes M, Clifton PM. Appetite regulatory hormone responses to various dietary proteins differ by body mass index status despite similar, reductions in ad libitum energy intake. J Clin Endocrinol Metab. 2006 Aug;91(8):2913-9. Epub 2006 May 30. PubMed PMID: 16735482.
[2]Dhillon J, Craig BA, Leidy HJ, Amankwaah AF, Osei-Boadi Anguah K, Jacobs A, Jones BL, Jones JB, Keeler CL, Keller CE, McCrory MA, Rivera RL, Slebodnik M, Mattes RD, Tucker RM. The Effects of Increased Protein Intake on Fullness: A Meta-Analysis and Its Limitations. J Acad Nutr Diet. 2016 Jun;116(6):968-83. doi: 10.1016/j.jand.2016.01.003. Epub 2016 Mar 3. [3]Martens EA, Gonnissen HK, Gatta-Cherifi B, Janssens PL, Westerterp-Plantenga MS. Maintenance of energy expenditure on high-protein vs. highcarbohydrate diets at a constant body weight may prevent a positive energy balance. Clin Nutr. 2015 Oct;34(5):968-75. doi: 10.1016/j.clnu.2014.10.007. Epub 2014 Nov 8. PubMed PMID: 25466951.
[4]Gwin JA, Maki KC, Leidy HJ. Increased Protein Consumption during the Day from an Energy-Restricted Diet Augments Satiety but Does Not Reduce Daily Fat or Carbohydrate Intake on a Free-Living Test Day in Overweight Women. J Nutr. 2017 Dec;147(12):2338-2346. doi: 10.3945/jn.117.255554. Epub 2017 Oct 25. PubMed PMID: 29070709.
[5]Hoertel HA, Will MJ, Leidy HJ. A randomized crossover, pilot study examining the effects of a normal protein vs. high protein breakfast on food cravings and reward signals in overweight/obese "breakfast skipping", late-adolescent girls. Nutr J. 2014 Aug 6;13:80. doi: 10.1186/1475-2891-13-80. PubMed PMID: 25098557; PubMed Central PMCID: PMC4249715.
[6]Wycherley TP, Moran LJ, Clifton PM, Noakes M, Brinkworth GD. Effects of energy restricted high-protein, low-fat compared with standard-protein, low-fa diets: a metaanalysis of randomized controlled trials. Am J Clin Nutr. 2012 Dec;96(6):1281-98. doi: 10.3945/ajcn.112.044321. Epub 2012 Oct 24. Review. PubMed PMID: 23097268.
[7]Santesso N, Akl EA, Bianchi M, Mente A, Mustafa R, Heels-Ansdell D, Schunemann HJ. Effects of higher versus lower-protein diets on health outcomes: a systematic review and meta-analysis. Eur J Clin Nutr. 2012 Jul;66(7):780-8. doi: 10.1038/ejcn.2012.37.
[8]Martens EA, Lemmens SG, Westerterp-Plantenga MS. Protein leverage affects energy intake of high-protein diets in humans. Am J Clin Nutr. 2013 Jan;97(1):86-93. doi: 10.3945/ajcn.112.046540. Epub 2012 Dec 5. PubMed PMID: 23221572.

Fonterra
Dairy for life

In its annual look into the crystal ball at what to expect in food trends across the world New Nutrition Business, a global research company in the food, health and nutrition sectors, noted that in 2019 ‘new product concepts are being launched, existing ones reinvented and product packaging updated to highlight the protein content’. Even foodservice chains selling bagels are marketing themselves as a way to “get protein”. Contract manufacturers producing for brand-owners report that protein is what all of their customers are interested in. “If you look at the items that consumers say they want more of in their diet, protein tops the list,” said David Portalatin, a Houston-based food industry adviser for NPD Group, in an interview with Bloomberg.

Consumer research in the United States by Nielsen underlines the demand for protein with 55% of US households saying high protein is an important attribute which they consider when buying food.

## NOT ALL PROTEIN IS EQUAL

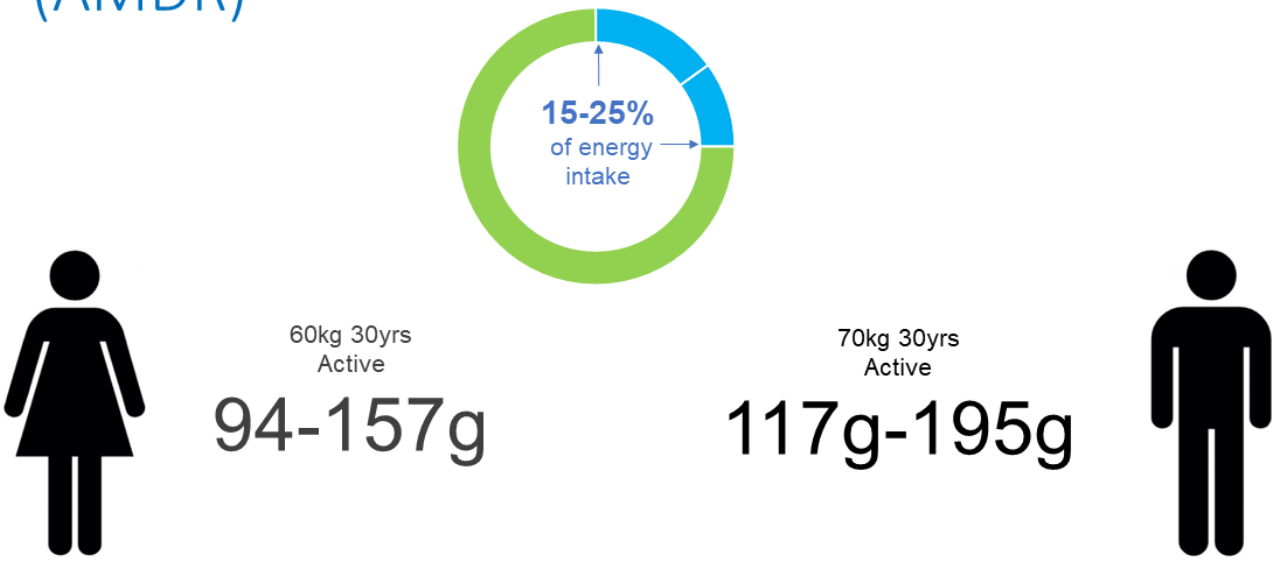
Most of us don’t know the difference between various types of protein and even less about the quality of different proteins. But one thing that is clear, consumers prefer it from natural sources that they can easily understand. Dairy stands at the head of that queue.

Protein can be sourced in varying amounts from multiple foods. Plant-sourced protein such as legumes, nuts, and grains contain some but not all amino acids. Animal sourced proteins such as eggs, red meat, white meat and dairy (as well as soy which is plant-sourced) contain all nine essential amino acids – a one-stop protein shop.

Whatever your age and weight, dairy is an excellent and convenient way of meeting the recommended daily intake of protein needed for muscle maintenance and growth as well as a healthy, balanced diet.

Fonterra
Dairy for life

# Protein requirements for optimal health (AMDR)




Food Standards Australia New Zealand (2010). Nutrient Reference Values in the Australian New Zealand Food Standards Code – Potential Revision Consultation Paper.

A key benefit of dairy protein is that it is well digested and absorbed. In addition, the amino acids in dairy are good at helping build and maintain muscle.

All amino acids are important, but a particular group known as branched chain amino acids (BCAAs) that are found in dairy, are unique in their ability to stimulate muscle growth. So, combining exercise with a balanced diet containing high quality protein, like those found in dairy products, can be particularly helpful to build and maintain muscle mass.

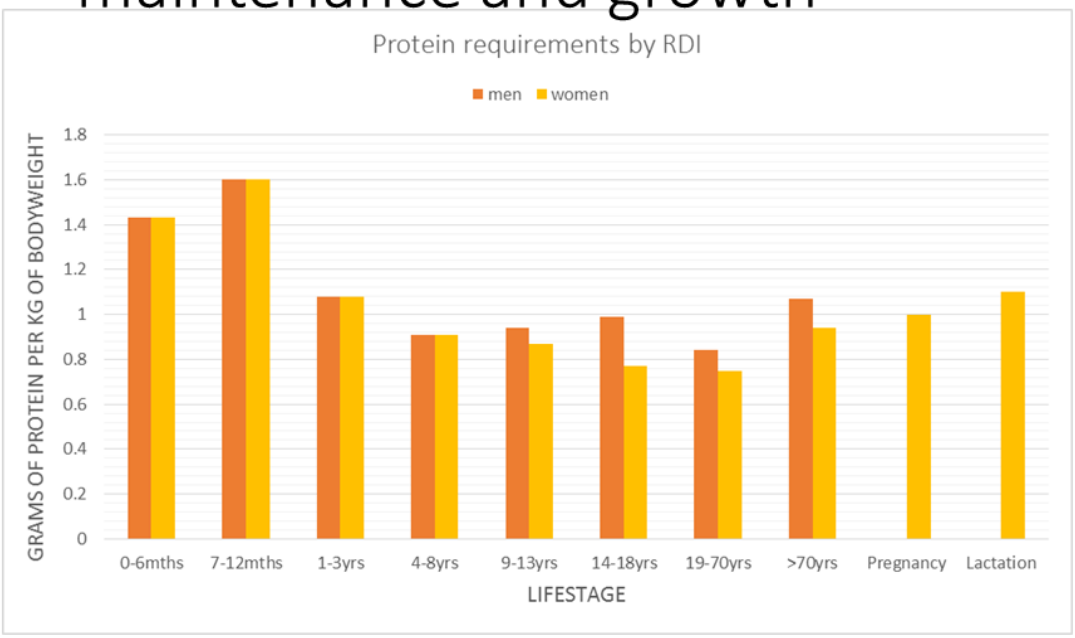
## MILK: THE COMPLETE PROTEIN

Science continues to show the benefits of regularly drinking milk. It's long been understood milk can help build strong bones and teeth. It also has B vitamins for energy, high-quality protein for muscle, plus three bone-building nutrients, including calcium, phosphorus and protein.

The major proteins found in milk are casein and whey. Caseins account for approximately 80% of the protein in cow's milk and whey proteins make up about 20% of the total protein. A key point of difference is the speed at which each is digested. Whey is digested significantly faster than casein. This makes whey protein ideal for use before and after exercise and first thing in the morning. Taken before going to sleep, casein protein can support the rebuilding of muscle overnight.

Fonterra™
Dairy for life

# Dietary protein requirements (RDI) for maintenance and growth




60kg 30yrs

45g

70kg 30yrs

58.8g

## MILK AND PLANT BASED ALTERNATIVES

Cow's milk was first consumed by humans 10,000 years ago in what is now known as Afghanistan and Iran, making milk one of humanity's first foods. With the use and benefits of cow's milk well established, it's not surprising alternatives have come into the market to try and piggy back on its success.

Non-milk alternatives typically name themselves after their protein source (soy, rice, almond etc) but actually contain only small amounts of these ingredients in the final product.

A glass of cow's milk contains high quality protein and more naturally occurring nutrients such as calcium and phosphorous. Milk alternatives can be highly processed and typically have added sugar. In addition, the levels of vitamins and minerals can vary considerably from product to product.

Fonterra

Dairy for life

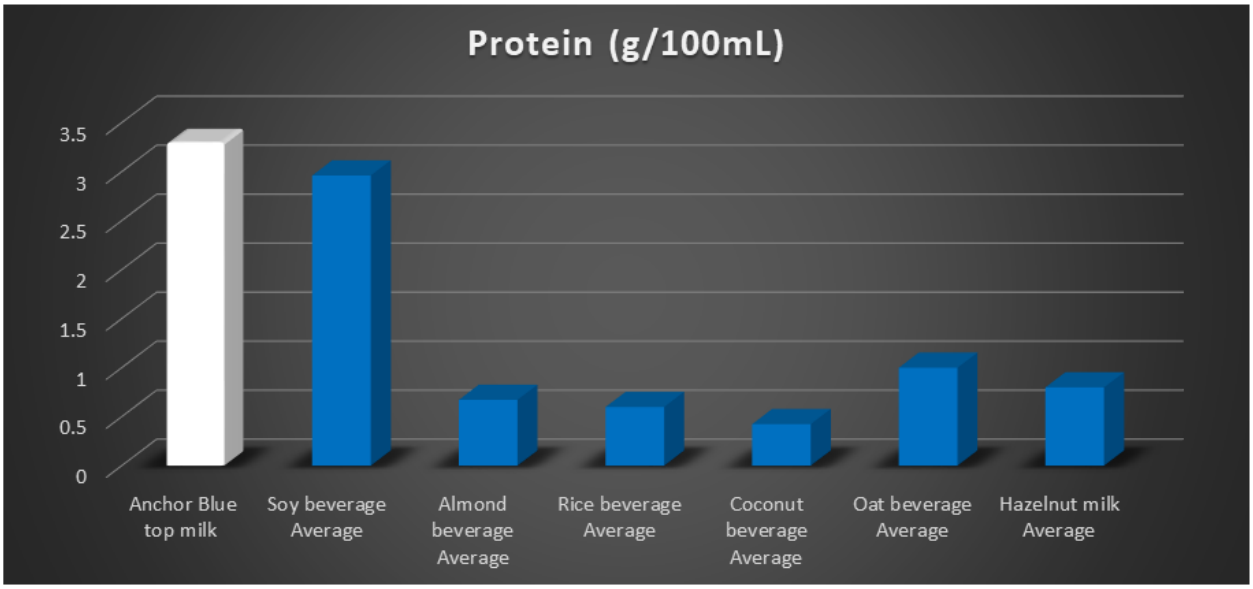
A 2018 survey by US based Dairy Management Inc of more than 2000 people involving those that only drink milk, those that only drink plant-based alternatives and those who use both found that consumers expect products labelled as ‘milk’ to be comparable to dairy milk in terms of nutrition. More than 20% associated almond and soy ‘milk’ with dairy milk. Among those who drink both dairy milk and plant-based alternatives, 30% associated plant based alternatives with dairy milk. And, in terms of key drivers for purchase, 62% of those that only use plant-based alternatives said it was because of nutrition and 65% because of health (benefits).

The reality to those perceptions is quite the opposite. Cow’s milk has one key ingredient from a totally natural source and is minimally processed. Most plant based alternatives include multiple added ingredients including sugars, oils and fortified vitamins and minerals.

# Nutrition information panel comparisons

## Protein

- Cows milk has higher protein content per volume




Protein content of cows' milk and milk alternatives
*Average value (Soymilk n=24, Almond milk n=11, Rice milk n=8, Coconut milk n=4)
Data produced from Mintel database (2016)

Fonterra
Dairy for life

# PROTEIN AND EXERCISE

Protein is important to everyone’s exercise performance, not just gym-junkies and body builders. Science continues to reveal the key role that protein plays in muscle building and recovery. The quality of the protein and when it is consumed is a factor in muscle development and function, not just the quantity of protein consumed.

Three key things to know about protein and the way you exercise:

- Protein supports sustained energy, important for keeping active.
- Protein is a key to the maintenance of musculoskeletal system, being a key component of bones, muscles and joints.
- Protein is vital to the repair and building of muscle which will help get the best results from the exercise you do.
- Choosing a quality protein will make all the difference, some sources of high quality protein to include in your diet are: milk, cheese, yoghurt, eggs and lean meats such as chicken, turkey and seafood

Fonterra
Dairy for life

# AWARENESS WIDENING

Getting more protein has become a priority for many consumers, thanks to a steady stream of media attention and positive science about protein's importance as part of a healthy diet.  Popular diets that are higher in protein content such as low carb and paleo diets have also highlighted the role of protein.

Active sports-oriented young people and frequent gym-goers are key influencers in the spread of protein awareness. They are the leading-edge consumers, using protein to support their performance, researching quantity and quality while some are trialling eating high protein low fat/low carb diets. Because they're regular people doing regular things – work, university etc - they familiarise the use of protein among friends, workmates and acquaintances.

This fitness trend has made words like 'macronutrients' and 'muscle recovery' semi-familiar in the mainstream. And, with consumers increasingly time poor, making popular protein products available as single-serve, easy to eat and good tasting has helped it become part of everyday life.

Fonterra
Dairy for life