Question topics

Nutritional quality

Calcium

Q Are those who use homemade soya milk at risk of vitamin and mineral deficiency? **Q** If soya product not fortified with calcium, will it be enough for adults and children need?

Individuals should be encouraged to opt for fortified variants wherever possible. However, if they choose variants without calcium, there is no reason why they cannot meet calcium requirements through a balanced diet. Calcium is in fact ubiquitous in the diet and present in many plants. Individuals following a vegan diet should include 2-4 servings daily of good plant sources of calcium such as low oxalate green veg e.g. Pak choi, kale, seeds (especially sesame seeds and tahini paste), beans and pulses esp. soya, chickpeas, kidney, black and goa, calcium set firm tofu, dried figs & apricots, nuts esp. almonds and Brazil nuts etc. Additionally, there are non-plant foods such as dairy, cheese, fish with soft bones such as sardines and pilchards.

Protein

Q How does soya protein compare to other kinds of plant protein ? Is it more superior in nutrition quality? **Q** What is the biggest advantage of soya compared to other alternative proteins? **Q** Is soya amino acid profile comparable to animal protein?

Soya protein is of similar quality to animal proteins. The protein quality of individual foods is often assessed by comparing the amino acid profile to that of human protein requirements, as in the Protein Digestibility-Corrected Amino Acid Score (PDCAAS) and the Digestible Indispensable Amino Acid Score (DIAAS). Using these methods soya scores similarly to animal proteins such as meat, eggs and dairy.

However, it is important to note that nitrogen balance is achieved over the course of a day as the body is able to accumulate and store amino acids over this period. Thus, there is no need to rely on one food or one meal to provide all essential amino acids. Consuming a variety of plant-based protein sources over the course of a day and as long as energy requirements are met, all amino acids requirements (including essential) will be met.

Q Protein intakes and sarcopenia

With regard to sarcopenia, the important factor is adequate protein and energy intake alongside resistance training. For over 60's, it is important to note that protein requirements are higher, 1-1.2g protein per kg body weight.

Although soya has a marginally lower leucine content compared to other animal proteins -the protein quantity and quality is considered of high biological value and comparable to dairy – using the gold standard PDCAAS and DIAAS assessment methods. Even so, when comparing protein powders, soya isolate is lower in leucine content when compared to whey protein. Leucine is the key stimulator of muscle protein synthesis (MPS). Although acute studies have shown that soya protein stimulates MPS to a lesser extent than whey protein, these results are different from what we find in longer-term clinical studies where muscle mass and function is assessed. In fact, studies have found that there is a lack of correlation between acute changes in MPS and gains in muscle mass among subjects. In older individuals, the amount of leucine required to maximally stimulate MPS seems to be higher (due to a higher anabolic threshold). The few studies that have compared soya protein vs animal protein in healthy older people haven't found significant differences in muscle mass or strength. Even so, there's a need for more research focused on the efficacy of soya protein vs animal proteins in older people with acute/chronic conditions at risk of developing sarcopenia.

Other

Q Is sodium found in soya-based meat alternatives a concern?

No. it depends on the product and whether salt has been added. Many products are low in salt. See Prof. Rowlands presentation for more information.

Q Are we risking lowering levels of essential nutrients by switching to soya dairy alternatives?

Absolutely not. Please refer to Prof. Rowlands presentation.

Cancer

Breast cancer

Q For women who have had oestrogen-mediated breast cancer, can they still consume soya products? **Q** Is soya a safe alternative for women who have been diagnosed with breast cancer, both ER/PR positive and ER/PR negative subtypes?

Yes. There have been several prospective studies looking at soya intake in breast cancer survivors in Asian and western populations. The studies indicate reductions in risk of breast cancer mortality/recurrence in these groups, with hazard ratios of 0.7 to 0.8. The reductions were seen in both ER+ and ER- cancers.

See:

- Magee & Rowland review: Magee PJ & Rowland I. Soya products in the management of breast cancer. Curr Opin Clin Nutr Metab Care. 2012 Nov;15(6):586-91. doi: 10.1097/MCO.0b013e328359156f
- AICR Food Facts. Soya: intake does not increase risk for breast cancer survivors. AICR 2021. https://www.aicr.org/cancer-prevention/food-facts/soya/

Q Are soya isoflavone supplements safe for women who have had breast cancer who cannot be prescribed HRT?

There have been 6 intervention studies with isoflavones investigating effect on cell proliferation (a marker of breast cancer risk) . These included healthy women, women at high risk and breast cancer survivors. None of the studies detected an increase in proliferation.

Supplements vs soya foods with naturally occurring isoflavones. Caution should be exercised when taking isoflavone supplements as the content varies depending on the product, and efficacy cannot be guaranteed without knowledge of the specific product. Additionally, it is soya foods with their complex and rounder nutrition profile that are key to healthy eating for disease prevention. As well as isoflavones, soya foods and drinks are naturally low in saturated fat whilst providing high quality protein, fibre and minerals – nutrients often associated with improved health outcomes. 2 servings of soya foods e.g. tofu, soya drinks (made from whole beans), edamame beans will provide adequate soya isoflavones.

See: Messina M, Blanco Mejia S, Cassidy A, et al. Neither soyfoods nor isoflavones warrant classification as endocrine disruptors: a technical review of the observational and clinical data. Crit Rev Food Sci Nutr. 2022;62(21):5824-5885. doi: 10.1080/10408398.2021.1895054

Q How much soya needs to be consumed regularly to reduce the risk of breast cancer?

Breast cancer is multi-factorial and diet is one lifestyle factor that can influence outcomes. It is the overall quality of the diet that can influence some cancers. Moderate soya consumption of 1-2 daily soya foods as part of a nutritious balanced diet can be considered safe and potentially beneficial when it comes to breast cancer risk.

See: WCRF/AICR. Diet, nutrition, physical activity and breast cancer. Revised 2018. https://www.wcrf.org/wp-content/uploads/2021/02/Breast-cancer-report.pdf

Q The cancer meta-analysis studies (presented by Prof. Rowland), were soya foods or supplements investigated?

In the observational studies, soya food products were investigated and those reporting on isoflavone exposure calculated this from the foods consumed and used this in their analysis. Intervention studies have used both soya foods and extracted isoflavones.

Muscle, protein & soya

Timing and quantity of protein

Q Is the timing or quantity of protein intake important to promote anabolism, or to stop muscle breakdown overnight?

Both states of catabolism and anabolism are a normal part of a cycle that the body switches many times during the day. Stopping catabolism overnight would require waking up in the middle of the night to have a meal, which doesn't seem a logical option. To minimize this, the other option is to eat before bedtime. But this also has its downside, since food intake before going to sleep can disrupt sleeping patterns, therefore, leading to decreased levels of testosterone and growth hormone. Regarding time and quantity of protein. Yes, quantity is important since amino acids from protein are an anabolic stimulus for muscle synthesis. Recent research has shown that timing is not as important as protein quantity. Traditionally it has been considered that protein intake should take place one hour after exercise, but we now know that muscle protein synthesis remains active 24 h (or even more) after resistance exercise training.

Q Is there an optimal quantity of soya protein in one meal, for promoting muscle function?

This will depend on the protein requirements of the persona we are assessing. It should be calculated depending on its age, physical activity and the presence of illness. As a rule of thumb, it is considered that young individuals should consume about 15-20 g of high-quality protein (such as soya) per meal and older people about 30 g per meal. As a reminder, those are grams of protein, not food.

Q Does the quantity and dose of soya protein have any bearing on children's growth and on prevention of sarcopenia in elderly?

Dr Trabal is not a paediatric expert therefore cannot respond to the first part of this question. Regarding older people, this was covered within his presentation. But to iterate, of most importance is to ensure protein requirements are met which will vary depending on the health status of the individual. With regard to protein dose, research indicates that protein intake should be spread evenly among the three main meals whilst other researcher has shown that this is not as important as ensuring protein needs are met. Finally, Dr Trabal would like to emphasise the fact that protein intake is not obtained from a single food, but rather a variety of foods consumed over the course of a day. Having said that, soya protein is a high-quality protein that can meet protein requirements as part of a varied healthy diet.

Q What are the main bioactive and mechanisms of action behind this effect on muscle function? Is it only protein?

Since amino acids, along with exercise, are one of the main drivers of muscle protein synthesis, in this case protein intake exerts the main action. Additionally, ensuring energy requirements are also met is important to prevent protein catabolism. Having said that, protein foods are greater than the sum of their constituent amino acids. As most foods, protein rich foods such as soya and soya-based foods are a food matrix composed of mixed macro and micronutrients, and other bioactive molecules that may elicit a positive effect on muscle function.

Animal/dairy vs soya protein

Q What is the difference between soya and dairy on muscle? How does soya compare with animal protein in muscle function?

As stated in the presentation, over the long-term, there is no difference between consuming soya or dairy proteins for building muscle mass or strength among those performing RET. Since muscle function can be assessed measuring strength or physical performance, we can say that over the long-term, there is no difference between consuming soya or animal proteins for strength among those performing resistance exercises.

See: Messina M, Lynch H, Dickinson JM, et al. No difference between the effects of supplementing with soya protein versus animal protein on gains in muscle mass and strength in response to resistance exercise. Int J Sport Nutr Exerc Metab. 2018 Nov 1;28(6):674-685. doi: 10.1123/ijsnem.2018-0071

Optimum soya food format

Q With regard to muscle mass and strength: which soya food format has the greatest benefit? i.e. liquid or solid or semisolid - isolate vs whole foods etc.?

There is not "one size fits all" format for a soya food format, it will depend on individual needs and preferences. Since whole protein foods provide the basis for healthy eating patterns, I'm more in favour of using the least processed foods (i.e. soya beans, soya drink, tofu, tempeh...). Some people may not like some of these foods, therefore, soya-based meat alternatives may be used. When in need, soya protein isolate can facilitate adequate total protein intake and assist with dietary protein distribution.

Muscle health during the menopause

Q The study presented by Dr Trabal on soya consumption in middle aged women. Women taking hormone replacement therapy – any combination of oestrogen / progesterone/ testosterone - would this influence muscle mass?

HRT and testosterone especially will influence to some extent muscle synthesis. It will partially depend on the HRT formulation. Since one of the objectives of HRT can be treating decreased muscle mass, some formulations may include testosterone which will help in the improvement of muscle mass. But, as already stated, protein intake and resistance training will be the main treatment for improving muscle function.

References for muscle hypertrophy

Q What is the most credible reference entity for consultation of guidelines on recommendations for muscle hypertrophy?

Muscle hypertrophy is a very much researched area, but it still generates lots of controversy since there are many individual differences when it comes to this. Brad Schoenfeld is one of the most cited researchers in this field. In collaboration with other authors, Brad published a position stand last year in relation to this issue and there is also another position statement on hypertrophy in older people that Dr Trabal recommends.

See:

- Schoenfeld B, Fisher J, Grgic J, et al. Resistance training recommendations to maximize muscle hypertrophy in an athletic population: position stand of the IUSCA. Int J Strength Cond. 2021;1(1):1–30.
- Fragala MS, Cadore EL, Dorgo S, et al. Resistance training for older adults: position statement from the national strength and conditioning association. J Strength Cond Res. 2019;33(8):2019-2052. doi: 10.1519/JSC.0000000000003230

Environmental impact of soya

Soya and deforestation

Q Does soya not cause deforestation of the rain forest? Should soya foods be labelled with where they are sourced from? **Q** What is the environmental impact of soya for human consumption vs animal feed?

This is a very interesting point. It's important to note that 90% of soya grown in the Amazon is used for animal feed (in particular poultry and pigs) and not for human consumption. And in Europe, the majority of soya for human consumption is sourced away from the rainforest from North America, Europe or Asia. Therefore, soya foods for human consumption are unlikely to be a cause of deforestation. Prof Rowland also adds that it does not make environmental sense to feed soya to animals which are then consumed by people. Growing soya to feed animals for food has a large environmental impact as it uses significantly more land, water, fertilizers and other resources, compared to growing soya for direct human consumption. Another consideration is the ability of soya, like other legumes, to fix nitrogen, whereby they are able to nourish soil and reduce the need for excess fertilizer use.

Soya's environmental footprint

Q How is the environmental footprint of soya foods calculated? Does it include production and transportation?

Poore & Nemecek dataset on the environmental footprint of foods is internationally renowned and most trusted source. Data was collated from 38,700 farms in 119 countries to provide detailed environmental impact of 40 commonly consumed foods which account for approximately 90% of global protein and calorie intake. The data includes impact from farm to retail and provides information on six environmental factors: carbon emissions, fresh water use, water scarcity use, land use, eutrophication & acidification.

See:

- Poore J, Nemecek T. Reducing food's environmental impacts through producers and consumers. Science. 2018;360:987-92. doi: 10.1126/science.aaq0216
- Ritchie H & Roser M. Environmental impacts of food production. Our World in Data, revised 2021. Available at: https://ourworldindata.org/environmental-impacts-of-food
- Also see Prof. Rowland's presentation which covers this topic

Ultra-processed foods

Gut health

Q We are writing our position on ultra-processed foods. In your view, how do soya dairy alternatives fit, especially regarding health outcomes? **Q** Can you comment on ultra-processed meat analogues vs. non-processed products with respect to soya and health? **Q** Are highly processed soya foods as beneficial as minimally processed or fermented (e.g., tofu, tempeh)? **Q** I am concerned about the sourcing of soy products in terms of how much processed they are. Any tips on how to check quality? **Q** I understand the health benefits of soy, but switching to soy burgers for instance is increasing our intake of processed foods - does this still remain a healthy option?

Relying solely on how processed a food is as a measure of nutritional quality, health and environmental impact is neither accurate nor is it helpful to consumers. The overall quality of a food has to be considered and in context of the population needs. Ultra-processed foods which are also calorie dense and high in saturated fats, salt and/or sugars are indeed not conducive to good health or the environment. This is the reflection of a number of dietetic health bodies such as the British Dietetic Association and the American Nutrition Society. As an example, some foods which are fortified by law with essential micronutrients to reverse population deficiency – would be classified as processed. Additionally, a recent in-depth review clearly demonstrates that despite soya alternatives to dairy and meat being classified by the NOVA system as ultra-processed, they are in the main superior to their dairy and meat comparisons for nutritional quality, health and environmental footprint.

See:

- Messina M, Sievenpiper JL, Williamson P, et al. Perspective: Soy-based meat and dairy alternatives, despite classification as ultra-processed foods, deliver high-quality nutrition on par with unprocessed or minimally processed animal-based counterparts. Adv Nutr. 2022;13(3):726-738. doi: 10.1093/advances/nmac026
- Gibney MJ, Forde G, Mullally D, et al. ASN Commentary: Ultra-processed foods in human health: a critical appraisal. Am J Clin Nutr. 2017;106:717–24.
- British Dietetic Association (BDA). Position statement: Processed food. BDA Jan 2021. Accessed May 2022. https://www.bda.uk.com/resource/processed-food.html

Safety – dispelling the myths

Q Is there any risks for taking too much soya products? for any patient group? Does the consumption of soy affect testosterone levels in men?

Too much of any food in the diet will result in the displacement of other nutritious foods resulting in lack of variety and balanced of the many essential nutrients needed for survival. The recommendation is 1-2 daily servings of soya foods/drinks as part of a varied and balanced diet. This is realistic and fits perfectly into a balanced diet. Clearly, anyone that has been diagnosed with an allergy to soya should avoid all soya sources. With the exception of soya allergy, studies have consistently demonstrated soya foods consumption to be safe across all life stages and sexes including breast cancer survivors and men's health. Not only this, but soya foods are in the main nutritious, have a lower environmental profile and have been associated with numerous positive health outcomes.

Dr Yamamoto adds: *From the historical experience of the Japanese, the harm of overdose of soya protein is not considered. The Japanese who eat a lot of soya beans have the longest life in the world. You may like it or hate it, but soya is not considered harmful*.

Prof Rowland adds: *The overwhelming amount of clinical evidence indicates neither soya food nor isoflavone intake affect levels of total or free testosterone or estrogen or oestradiol levels in men.*

See:

- Messina M, Blanco Mejia S, Cassidy A, et al. Neither soyfoods nor isoflavones warrant classification as endocrine disruptors: a technical review of the observational and clinical data. Crit Rev Food Sci Nutr 2021;1-57. doi: 10.1080/10408398.2021.1895054
- Messina M. Soy and Health Update: Evaluation of the clinical and epidemiologic literature. Nutrients. 2016 Nov 24;8(12):754. doi: 10.3390/nu8120754
- AICR. AICR Food Facts. Foods that fight cancer. Soy: intake does not increase risk for breast cancer survivors. AICR 2021. Accessed Jan 2022. https://www.aicr.org/cancer-prevention/food-facts/soy/
- Reed KE, Camargo J, Hamilton-Reeves J, et al. Neither soy nor isoflavone intake affects male reproductive hormones: An expanded and updated meta-analysis of clinical studies. Reprod Toxicol. 2021 Mar;100:60-67. doi: 10.1016/j.reprotox.2020.12.019

Q What about soya and thyroid function?

Soya foods have absolutely no negative impact in individuals with a healthy thyroid function. Individuals with a compromised thyroid function and who are taking thyroxine medication, should consume soya and other specified foods such as herbs and other medicines, 2 hours away from taking their medication.

See: Messina M, Blanco Mejia S, Cassidy A, et al. Neither soyfoods nor isoflavones warrant classification as endocrine disruptors: a technical review of the observational and clinical data. Crit Rev Food Sci Nutr 2021;1-57. doi: 10.1080/10408398.2021.1895054

Questions relating to infants

Q A number of questions were posted relating to soya infant formulae and infant nutrition.

The nutrition and weaning practice of infants and the very young (under 2 years) are unique and will vary from country to country. Specific dietary advice for this age group, should be sought from those specialising in the topic e.g. in the UK it will be paediatric dietitians. However, it is well established that soya foods can be introduced as part of a balanced and varied weaning diet (from 6 months onwards) of healthy full-term infants without allergies. Vegan and 100% plant-based diets do require planning for the very young under 2 years. To ensure the specific nutritional demands are met, specialised professional advice should be sought. Decision on formula feeding will vary and discussions are needed with the infant's clinician and/or dietitian.

See: British Dietetic Association (BDA) (2017). Soya Foods. Accessed September 2022. https://www.bda.uk.com/resource/soya-foods.html

Q Soya allergy

Soya is an allergen listed in almost all countries of the world. It is one of the 14 allergens listed by the European Union including cow's milk protein, shellfish, eggs, peanuts and tree nuts, gluten, lupin, celery, fish, sulphur dioxide, sesame, molluscs, and mustard). Soya allergy prevalence is lower than other food allergies such as peanut, egg and cow's milk protein. Soya allergy prevalence is around 3 per 1,000 adults and in children marginally higher, however, 70% outgrow the allergy by the age of 10.

See:

- Scientific Opinion on the evaluation of allergenic foods and food ingredients for labelling purposes (2014). European Food Safety Authority. Accessed September 2022. https://www.efsa.europa.eu/en/efsajournal/pub/3894
- Consumer Affairs Agency (2004). Food Labelling. Accessed September 2022. https://www.caa.go.jp/en/policy/food_labeling/pdf/food_labelling_cms203_200410_01.pdf
- Food Allergen Labeling and Consumer Protection Act of 2004 (2004). U.S Food & Drug Administration. Accessed September 2022. https://www.fda.gov/food/food-allergensgluten-free-guidance-documents-regulatory-information/food-allergen-labeling-and-consumer-protection-act-2004-falcpa

Specific studies

Prof Yamamoto's studies – soya impact on type 2 DM and lipids

Prof. Yamamoto presented two of his study during his presentation.

- Ngoc Thi Ta, Hien Thi Thu Ngo, Phuong Mai Nguyen, et al. Effectiveness of Textured Soybean Protein on Blood Biochemistry in Vietnamese Type 2 Diabetes Mellitus Patients. J Nutr Sci Vitaminol (Tokyo). 2022;68(1):32-38. doi: 10.3177/jnsv.68.32.
- Borodin EA, Menshikova IG, Dorovskikh VA, et al. Effects of two-month consumption of 30 g a day of soya protein isolate or skimmed curd protein on blood lipid concentration in Russian adults with hyperlipidemia. J Nutr Sci Vitaminol (Tokyo). 2009;55(6):492-7. doi: 10.3177/jnsv.55.492

Other

Gut microbiota

Q What is the impact of gut microbiota when comparing dairy and soya?

There are no clinical studies known to the speakers which compare soya and dairy specifically on gut microbiota, but Prof. Rowland recommends the references below, which specifically investigate the impact of soya foods on gut microbiota.

See:

- Inoguchi S, Ohashi Y, Narai-Kanayama A, et al. Effects of non-fermented and fermented soybean milk intake on faecal microbiota and faecal metabolites in humans. Int J Food Sci Nutr. 2012 Jun;63(4):402-10. doi: 10.3109/09637486.2011.630992
- Fujisawa T, Ohashi Y, Shin R, et al. The effect of soymilk intake on the fecal microbiota, particularly Bifidobacterium species, and intestinal environment of healthy adults: a pilot study. Biosci Microbiota Food Health. 2017;36(1):33-37. doi: 10.12938/bmfh.16-017

Sustainable diets

Q Can soya foods be included as part of a healthy sustainable diet?

Yes of course: the important thing is to aim for a diet that is predominantly made up of healthful plant-foods such as wholegrains, legumes, beans, nuts, seeds, fruit and vegetables, and smaller quantities of lean animal foods.

See: Willet W, Rockström J, Loken B et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. Lancet. 2019;393(10170):447-492. doi: 10.1016/S0140-6736(18)31788-4

GMO

Q What about individuals concerned about GMO?

In Japan, soya product must indicate GMO soya bean. Mandatory GMO food labels are the case for 64 countries globally including the European Union, Russia, China, Brazil, Australia, Turkey and South Africa.

Soya and gout

Purine base (main factor of gout) is low in soybean, which means soybean and its products are quite safe foods for gout.

See: Messina M, Duncan A, Messina V, Lynch H, Kiel J and Erdman JW Jr (2022) The health effects of soy: A reference guide for health professionals. *Front. Nutr.* 9:970364. doi: 10.3389/fnut.2022.970364

Soya and the menopause

Q Evidence for soya benefits during the menopause?

See Prof. Rowlands presentation where he covers this topic off in detail. Overall, studies using extracted soya isoflavones, show modest 20-25% decrease in hot flushes (on top of the placebo-effect). More importantly, menopausal women's risk of cardiovascular events increase significantly alongside elevated serum cholesterol levels. This is due to the loss and/or fluctuation in oestrogen

levels. Soya protein has been shown to lower serum cholesterol levels and some studies have shown that isoflavones can help improve endothelial fluidity.

Soya and prostate cancer - mechanism

Q What is the mechanism of protection for prostate cancer?

More evidence is needed to fully understand the mechanism by which soya can potentially reduce the risk of prostate cancer.

See: Messina M, Blanco Mejia S, Cassidy A, et al. Neither soyfoods nor isoflavones warrant classification as endocrine disruptors: a technical review of the observational and clinical data. Crit Rev Food Sci Nutr 2021;1-57. doi: 10.1080/10408398.2021.1895054

Soya impact: Asia vs West

Q Is the varied effect of soya seen between Asian & Western populations caused by their different microbiome profiles (equol producers or not)?

Asian populations do seem to have a higher proportion of equol producers (50% vs 35%), but the main reasons for differences are the much higher level of intake in Asians and also the pattern of consumption (throughout life vs just in adulthood).

Soya & the menstrual cycle

The available data from the limited observational studies provide little evidence for an association between habitual soya intake and the menstrual cycle. Based on the most recent meta-analysis of clinical trials, soya/isoflavone intervention results in a small (on average with 1 day) increase in menstrual cycle, though still well within the normal cycle length range. Clinical research is limited but the limited data available suggests there is no impact of soya consumption on pregnancy related outcomes.

Soya and type 2 diabetes

Q Is soya alternatives for adults with T2D a good milk replacement?

A meta-analysis by Tian (2017) compared various protein sources on risk of T2D. Red and processed meat increased risk, egg and fish had no effect, dairy and whole milk reduced risk (RR 0.89 and 0.87 respectively) as did soya (RR 0.74). Plant-based diets in general significantly reduce risk of T2D vs omnivorous diets, so incorporating soya into a plant-based eating plan will be helpful.

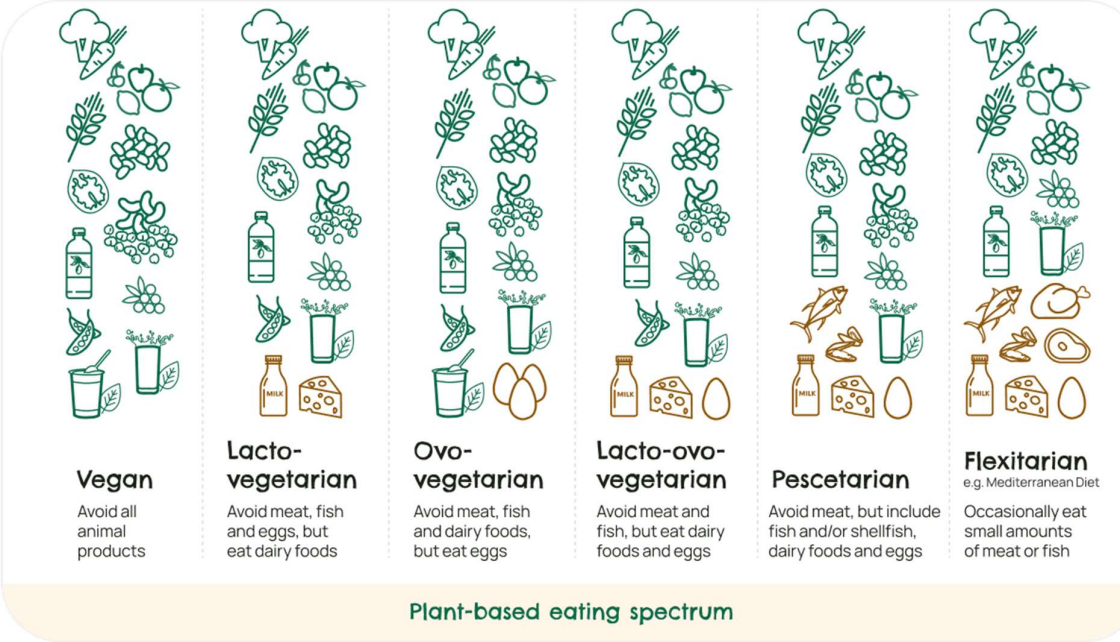
See: Tian S, Xu Q, Jiang R, et al. Dietary protein consumption and the risk of type 2 diabetes: a systematic review and meta-analysis of cohort studies. Nutrients. 2017 Sep 6;9(9):982. doi: 10.3390/nu9090982

Flexitarian diet - meaning

The term 'Flexitarian diet' is not well defined other than it emphasises plant foods with small amounts of animal products. Most food based dietary guidelines are classified as flexitarian as the majority of the recommendations are to improve intakes of plant foods. As with all diets, flexitarian diets can be beneficial for health when healthful plant foods are selected e.g. nuts, wholegrains, fruit, vegetables, beans and legumes over refined sources.

Q What is plant-based eating?

The term “plant-based diet” encompasses a variety of eating patterns which prioritise healthful plant foods with no or moderate amounts of animal-derived foods. Plant-based eating does not automatically exclude all animal products, rather it puts plant-based foods, such as fruits, vegetables, wholegrains, legumes, soya, nuts, seeds and plant-based alternatives to meat and dairy, at the core of the diet. Flexitarian diets include mostly plants, with moderate intakes of meat, dairy, and eggs. Flexitarian diets encourage variety and reflect many national food-based dietary guidelines. Individuals who actively attempt to minimise animal products in their diets often do so for health, ethical, or environmental reasons. Pescatarian diets exclude all animal products with the exception of seafood. Vegetarian and vegan diets are in the main based on plant foods including vegetables, fruits, soya, legumes, nuts and whole grains. Vegetarian diets exclude flesh meat and fish, but may include dairy and eggs (lacto-vegetarian or lacto-ovo vegetarian). Vegan diets typically source all calories from plants and exclude all animal products.


Vegan
Avoid all animal products
Lacto-vegetarian
Avoid meat, fish and eggs, but eat dairy foods
Ovo-vegetarian
Avoid meat, fish and dairy foods, but eat eggs
Lacto-ovo-vegetarian
Avoid meat and fish, but eat dairy foods and eggs
Pescetarian
Avoid meat, but include fish and/or shellfish, dairy foods and eggs
Flexitarian
e.g. Mediterranean Diet
Occasionally eat small amounts of meat or fish
Plant-based eating spectrum

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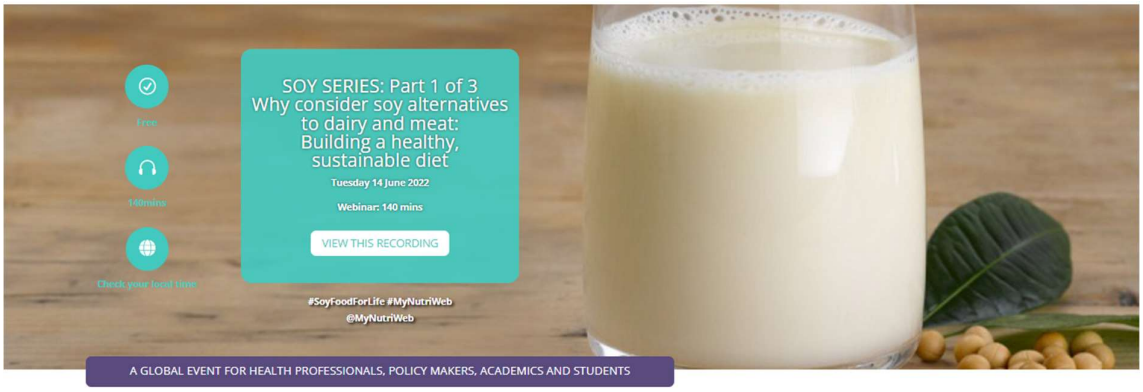
Why consider soy alternatives to dairy and meat: building a healthy, sustainable diet

14th June 2022



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- Promoting health in ASEAN people by integrating soy foods into the diet: Prof. Shigeru Yamamoto
- The role of soy in promoting muscle function: Dr Joan Trabal
- Soybean beta-conglycinin as an effective food material for preventing dyslipidaemia: Professor Mitsutaka Kohno

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