

FLAVOURED MILK

A NUTRITIOUS FIVE FOOD GROUP FOOD



FLAVOURED MILK IS A FIVE FOOD GROUP FOOD



FLAVOURED MILK ACTS AS A VEHICLE FOR CONSUMPTION OF THE DAIRY FOOD GROUP

AROUND ONE IN TEN 2-18 YEAR OLDS CONSUME FLAVOURED MILK



4 OUT OF 5 CHILDREN AND TEENAGERS AGED 2-18 YEARS NEED TO CONSUME MORE DAIRY FOODS



MEAN INTAKE (G) AMONG 2-18 YEAR OLDS:
FLAVOURED MILK: 32G
PLAIN MILK: 218G

WHAT ARE FIVE FOOD GROUP FOODS?

A dietary pattern should include a variety of foods from each of the Five Food Groups. These foods are nutrient rich and associated with important health benefits. Examples include vegetables, fruit, legumes, wholegrain breads and cereals, lean meats and poultry, fish, eggs, nuts and seeds and milk, cheese and yoghurt.

WHAT ARE DISCRETIONARY FOODS?

Also called 'junk foods', discretionary foods are those that do not fall into one of the Five Food Groups. They tend to be energy dense, nutrient poor foods. Examples of these foods include cakes, pies, hot chips, sugary drinks and alcohol.



Good nutrition is important at all ages and is particularly important during childhood and adolescence; a unique time of rapid growth and development. The best way to ensure children and teenagers get all the nutrients they need is to eat foods from each the Five Food Groups, in line with the Australian Dietary Guidelines. However the 2011/12 Australian Health Survey revealed that as a population group, they have one of the unhealthiest diets.

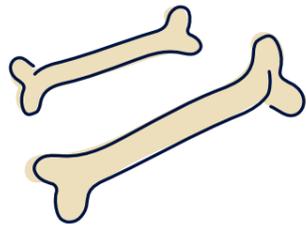
Around 39% of their energy intake comes from discretionary food and very few are meeting recommended intakes of foods from the Five Food Groups, including foods from the dairy food group; eight out of 10 children and adolescents aged 2-18 years do not consume enough milk, cheese and yoghurt.^{1,2} In light of this, it is not surprising that nine out of 10 teenage girls do not meet the recommended amount of calcium and are low in a number of other important nutrients.³

This is a major concern as childhood and adolescence is a critical period of development. What happens during this period impacts on a person's bone health for the rest of their life. Around 50% of adult bone mass is acquired during the adolescent years, while a 10% increase in peak bone mass could reduce the risk of fracture by 50% in women after menopause.⁴ It has also been estimated that by 2022, costs associated with osteoporosis, osteopenia and fractures will total \$33.6 billion.⁵

A body of research studies have confirmed that dairy foods such as milk have a favourable influence on bone health during childhood and adolescence. One way to help Australian children and adolescents get the nutrients they need for growth and development, is to encourage milk consumption. Both plain and flavoured milk are part of the dairy food group and are classified as a Five Food Group food, according to the Australian Dietary Guidelines and the Australian Bureau of Statistics.^{6,7} Despite this, flavoured milk is sometimes less than fully endorsed by health experts due to concerns around free sugars content and the impact on body weight, dental health and diet quality.

This document outlines six key reasons why flavoured milk should be encouraged in the diets of children and adolescents.

Dairy Australia is the national services body for the dairy industry. This report, prepared by health professionals at Dairy Australia, aims to bring together the most up-to-date and emerging research around the health benefits of flavoured milk. It draws from the latest evidence from around the globe to help health professionals and policymakers to understand the unique health benefits of milk, and to encourage all Australians to enjoy plain and flavoured milk varieties as part of a balanced diet.



FLAVOURED MILK CONSUMPTION IS A SIGNIFICANT PREDICTOR OF ADEQUATE DAIRY FOOD CONSUMPTION DURING ADOLESCENCE – A KEY TIME FOR BOTH BONE AND MUSCLE DEVELOPMENT

Adolescence is the critical window of opportunity to build and develop strong bones and muscles, preventing fractures and osteoporosis later in life.⁸ Dairy foods contribute important nutrients during this key period and including flavoured milk in the diet also increases variety, which in turn increases the likelihood that children and teenagers will meet their recommended number of dairy serves per day.

The body of evidence shows flavoured milk drinkers have a higher total milk intake than those who only consume plain milk.⁹⁻¹³ In addition, a study conducted by Sydney University found flavoured milk consumption at age 12 was associated with higher dairy intake at both ages 12 and 17. It has also been shown that **adolescents that consume flavoured milk at least twice a week have a five-fold greater chance of maintaining an adequate dairy intake during adolescence** (between the ages of 12 and 17 years) than those who don't consume flavoured milk.¹⁴

With the 2011–2012 Australian Health Survey revealing that only 1.5% of 14–18 year-olds met their recommended intakes from the dairy food group, it is important to find evidence-based ways of improving dairy consumption.²



THE ENTIRE FOOD MATRIX MATTERS MORE THAN SINGLE NUTRIENTS, LIKE SUCROSE

Traditionally, nutrition research has focused on the relationship between single nutrients (like saturated fat or sodium) and health. However, when nutrients are consumed as part of a food, together with other essential nutrients and bioactive components, they work synergistically to affect health rather than how you might expect them to act as nutrients on their own.¹⁵ It's therefore important to reassess the focus on nutrients and look at consumption of whole foods in the context of the entire diet, in line with the Australian Dietary Guidelines.

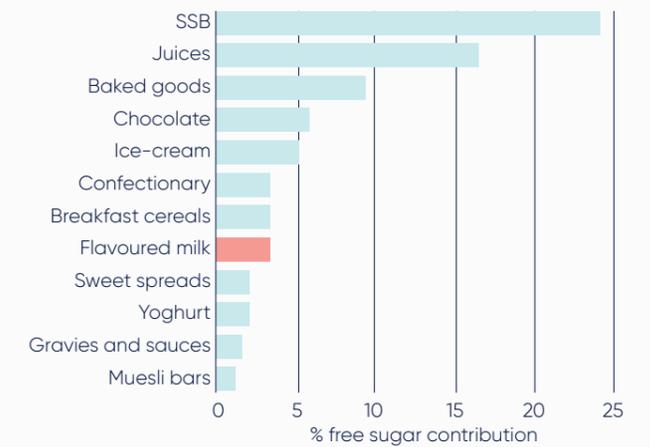
Just like plain milk, flavoured milk provides calcium, protein and iodine; nutrients that may be lacking in a child's diet, together with the same bioactive components and health benefits. Research has shown that drinking milk – whether plain or flavoured – contributes positively to children's nutrient intakes and consequently is related to the same positive health outcomes. Focusing on flavoured milk specifically, an Australian study found **flavoured milk drinkers aged 9 to 16 years were 1.7 times more likely to meet the Estimated Average Requirement (EAR) for calcium.**¹¹ In addition to calcium intakes, flavoured milk drinkers have significantly higher intakes of vitamin A than non-consumers of milk while having similar intakes of protein, phosphorus, magnesium, potassium and iodine, compared to plain milk drinkers.¹¹ These findings are important as children move into adolescence; a time when they most need these nutrients to support growth and development, but tend to drink less milk and consume more discretionary food and drinks.¹

Taste is an important driver of consumption and sugars added to a nutrient-dense food, like flavoured milk can help increase consumption of the dairy food group by enhancing palatability. On average, flavoured milk contains 3.9g/100mL of free sugars*. Flavoured milk (and milkshakes) contributes 3% to the total free sugars content of the diet of children and teenagers, far less than that of energy dense, nutrient poor beverages which are the highest contributors to free sugars intake in the Australian diet (Figure 1)⁶. The World Health Organization recommend free sugars intake be limited to less than 10% energy per day and the best way to achieve this is to limit or reduce intake of discretionary foods and drinks, such as sugar-sweetened beverages (SSBs).¹⁷

Approximately 4.6% of the total sugars in milk (plain and flavoured) comes from the intrinsic sugar, lactose.

The World Health Organization report no health implications associated with consumption of lactose, or other intrinsic sugars.

Figure 1 Contribution of various foods to free sugars intake in 2–18 year olds.⁵



FLAVOURED MILK (PER 250ML)		
	Regular fat	Reduced low-fat
Energy (kJ)	893.5	709.3
Protein (g)	8.5	9.5
Total fat (g)	9.3	4.8
Saturated fat (g)	6.0	3.1
Carbohydrate (g)	23.8	22.5
Total sugars (g)	22.5	20.5
Intrinsic sugar*	11.6	12.0
Free sugar (g)	10.9	8.5
Calcium (mg)	291.3	305.8

PLAIN MILK (PER 250ML)		
	Regular fat	Reduced low-fat
Energy (kJ)	690.4	451.6
Protein (g)	8.4	8.8
Total fat (g)	9.4	2.4
Saturated fat (g)	6.2	1.6
Carbohydrate (g)	11.7	12.1
Total sugars (g)	11.6	12.0
Intrinsic sugar*	11.6	12.0
Free sugar (g)	0.0	0.0
Calcium (mg)	298.0	317.3

THE NUTRITION INFORMATION PANEL LISTS TOTAL SUGARS. THIS VALUE INCLUDES:

Intrinsic sugars (those naturally found in foods like dairy, fruits and vegetables)

Free sugars* (added sugars and those found in honey and fruit juice)

Free sugars should be limited to less than 10% of total energy intake

Approximately 4.6% of the total sugars in milk (plain and flavoured) comes from the intrinsic sugar, lactose

The World Health Organisation report no health implications associated with consumption of lactose, or other intrinsic sugars

SOFT DRINK (PER 250ML)	
Energy (kJ)	380.4
Protein (g)	0.0
Total fat (g)	0.0
Saturated fat (g)	0.0
Carbohydrate (g)	23.6
Total sugars (g)	23.6
Intrinsic sugar*	0.0
Free sugar (g)	23.6
Calcium (mg)	0.0

Values based on the mean of ready-to-drink flavoured milk products (n= 174) and plain milk (n= 148) in the marketplace (as of March 2020).

* Average of five soft drink varieties from the Australian Food Composition Database.

** Based on intrinsic (lactose) content. Note these values are averages and differ between brands due to seasonal and geographical factors.

§ Australian Bureau of Statistics. 4364.0.55.011. Australian Health Survey: Consumption of added sugars, 2011-12. Canberra 2016.

3



CONSUMING FLAVOURED MILK IMPROVES DIET QUALITY

One advantage of including flavoured milk in the diet is children fare better nutritionally on a number of fronts. Research from both the US and Australia shows **children who drink flavoured milk have lower intake SSBs* and fruit drink than children who don't drink flavoured milk.**^{11, 13, 18, 19} Another study showed that when flavoured milk was consumed before a meal and as part of a meal, participants consumed less discretionary food, when compared to an energy equivalent SSB.²⁰

Furthermore, studies show nutritional benefits when flavoured milk is used as a substitute for sugar-sweetened drinks. A randomised controlled trial in 98 children aged 8-10 years found that those who drank flavoured milk rather than soft drink (3 x 200mL/day for 4 months) gained more lean body mass, while boys who drank flavoured milk were 0.7cm taller.²¹ Energy intakes were also significantly lower compared to those who continued to drink soft drink.



4



FLAVOURED MILK CAN BE INCLUDED AS PART OF A HEALTHY DIET, WITHOUT ADVERSE EFFECTS ON WEIGHT

Studies in both Australia and the US have shown that **despite containing added sugar, consumption of flavoured milk does not lead to weight gain, or changes in BMI.**^{11, 19} While some studies showed flavoured milk drinkers had higher total sugar and energy intakes compared with exclusively plain milk drinkers and non-milk drinkers, no differences in BMI or waist circumference were observed, meaning a healthy weight can be maintained if flavoured milk is included in the diet.¹²

There is also a benefit of consuming flavoured milk in place of SSBs. In a study that assessed the effect of swapping 100g sugary drink (defined in this study as sugar-sweetened carbonated and fruit flavoured drinks and fruit juice), for 100g milk (a small proportion being flavoured milk) on BMI and weight, every additional 100g/day increase in sugary drink was associated with a 100g increase in body weight.²³ On the other hand, substituting 100g/day of sugary drink with 100g/day of milk was associated with a 0.16kg decrease in weight. These findings are important given a 2013 systematic review and meta-analysis found that consumption of SSBs promotes weight gain in children.²⁴

A systematic review and meta-analysis has found that **for each additional serve of dairy food included in the diets of children, the risk of overweight and obesity is reduced by 13%** (although it should be noted this study included all types of dairy, not just flavoured milk).²⁵ There are a number of explanations for this. For example, dairy foods are a rich source of nutrients and bioactive compounds that may contribute to facilitating a healthy body weight and it is likely that they act collectively, rather than one particular component being responsible. Dairy foods are also a rich source of calcium that reduces absorption of fat and protein (whey and casein) help to regulate appetite and increase satiet.^{26, 27} In addition, the fatty acids found in dairy foods affect energy balance through reduced fat synthesis, increased fat breakdown and through appetite regulation.²⁸

*Sugar-sweetened beverages (SSBs) are defined as soft drinks, cordials, energy and electrolyte drinks, flavoured mineral waters and fruit and vegetable drinks that contain added sugar.²²

WHAT ABOUT PORTION SIZE?

Ready-to-drink flavoured milk products come in a range of portion sizes to meet different eating and drinking occasions (currently, products range from 150mL up to 2L). School canteen criteria in Australia vary according to state, but many suggest the best choices for children and teenagers range between 300-500mL (this also varies as to whether guidelines are targeted for primary or secondary school aged children).

According to the Australian Health Survey, median consumption of flavoured milk ranges from 203g/day for 2-3 year olds, up to 400g/day for 12-14 year olds.¹ Whatever portion is chosen, flavoured milk can act as an important vehicle for increasing consumption of the dairy food group.





FLAVOURED MILK CONTAINS TEETH FRIENDLY NUTRIENTS AND COMPONENTS

Milk (including flavoured milk) contains teeth friendly nutrients and components such as casein, whey, calcium and phosphorus that are protective against dental caries. Research shows that higher intakes of SSBs increase the risk of dental caries and tooth erosion, while higher intakes of milk-based beverages reduce the risk. This is likely due to the presence of substances in milk that are protective of teeth including lactoferrin and casein, milk's higher pH and the presence of other nutrients such as calcium and phosphorous which provide protection against dental caries.^{29,30,31} **As lactose, (the intrinsic sugar found in dairy foods) is accompanied by other nutrients found in the dairy food matrix, it is considered less cariogenic when compared to other sugars.**³¹ There are also some studies which show children with caries consume less milk than those without caries.^{30, 32, 33}

When it comes to flavoured milk specifically, studies in this area are limited, however the majority report **no association between flavoured milk intake and dental caries.**¹² Along with the properties of milk that are protective of dental health, further protection may be inferred due to findings that indicate beverages containing 5% added sugar or less have negligible or low cariogenic potential.³⁴ Given that flavoured milk provides an average of 3.9% added sugar* it therefore falls below this threshold. Researchers have concluded that the cariogenicity of flavoured milk is negligible to low when consumed in moderation and is a preferable alternative to SSBs.³⁵



FLAVOURED MILK IS A HEALTHY AND EFFECTIVE SPORTS RECOVERY DRINK

Many children and teenagers participate in regular sports activities and eating well before and after exercising is important to complement the benefits of physical activity. Flavoured milk provides an extra source of carbohydrate in the diet of exercising children and teenagers, which is important for the provision of energy. Flavoured milk also provides a source of fluid which is important for maintaining hydration.^{36,37}

Dairy foods including flavoured milk contribute to recovery goals after exercise by providing an optimal amount of high-quality protein to enhance strength and muscle gains. Dairy protein has been found to be superior to other protein sources for optimising protein synthesis following resistance exercise.³⁸ In addition, several studies show that milk is equally effective (or even better) than a non-nutritive sports drink or water as a rehydration aid and because flavoured milk is a low glycemic index (GI) food³, it can provide sustained energy release.^{36, 37, 39}

Some children and teenagers or parents may be concerned about whether milk sits well in the stomach prior to exercise. A study conducted by the Australian Institute of Sport in female long distance cyclists found no adverse effects on gut comfort or sporting performance when a dairy-rich meal (that included 3 serves of dairy) was eaten prior to strenuous exercise.⁴⁰ Overall, **flavoured milk is a cost effective and convenient choice that provides the right mix of fluid, electrolytes, carbohydrate, protein, vitamins and minerals in the diets of active children and teenagers.**

#Mean value ready-to-drink flavoured milks available in Australian retailers (n=148).

*A low GI food has a value of 55 or less. According to the University of Sydney, the GI of a selection of ready-to-drink, or beverage powder added to milk products (n= 11) ranges from 24 to 41.⁴¹

FLAVOURED MILK AND HEALTH



CONSUMPTION OF FLAVOURED MILK IS ASSOCIATED WITH

- ✓ Decreased consumption of discretionary foods
- ✓ Better diet quality
- ✓ Improved nutrient intakes

FLAVOURED MILK IS

- ✓ Just as nutritious as plain milk
- ✓ Not associated with adverse effects on weight, dental caries or dental erosion
- ✓ Low GI for sustained energy release





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