FOOD STANDARDS Australia New Zealand
Te Mana Kounga Kai – Ahitereiria me Aotearoa

Supplementary Information (at Approval)

Dietary Intake Assessment Report – Application A1156

Food derived from Super High Oleic Safflower Lines 26 and 40

Executive summary

The Application seeks to amend the *Australia New Zealand Food Standards Code* (the Code) to allow for the inclusion of food derived from two lines of genetically modified super high oleic (SHO) safflower. The OECD Unique Identifiers for these sunflower lines are GOR-73226-6 and GOR-73240-2 (herein referred to as 'SHO safflower'). As SHO safflower may be available for human consumption, FSANZ has assessed the potential increase in dietary intakes of oleic acid due to consumption of SHO safflower oil.

The dietary intake assessment used food consumption data from the 2011-12 Australian National Nutrition and Physical Activity Survey, the 2008 New Zealand Adult Nutrition Survey and the 2002 New Zealand National Children's Nutrition Survey. As there were no identified target or at-risk groups, data were analysed for each survey population as a whole. To determine the baseline consumer dietary intake of oleic acid, concentrations of oleic acid in the Australian and New Zealand food supplies were determined primarily using data from Australia's reference nutrient database (Food Standards Australia New Zealand, due for release in 2018). As oleic acid data in the USDA standard reference food composition database (National Agricultural Library, 2018) are more comprehensive, these data were used where FSANZ data were missing or the FSANZ value was zero. New Zealand food composition data were not used in this assessment. Concentrations of oleic acid in conventional and SHO safflower oils were provided by the applicant.

Consumer dietary intakes of oleic acid were estimated for *Baseline (unspecified oils are vegetable oil)*, *Baseline (unspecified oils are safflower oil)* and for two SHO scenarios. The first assumed that SHO safflower oil replaces all safflower oil in conjunction with the Baseline oleic acid dietary intakes (*100% SHO safflower oil* scenario) and the second assumed that all safflower and unspecified oils consumed are replaced by SHO safflower in conjunction with the baseline intakes (*100% SHO safflower oil plus 100% SHO unspecified oils* scenario).

Baseline intakes of oleic acid (from both baseline scenarios) ranged at the mean between 26-38 g/day and at the P90 between 42-67 g/day across the Australian and New Zealand population groups assessed. An increase in estimated intake was only shown when all safflower and unspecified oils were replaced with SHO safflower oil. Mean intakes increased by 3-4 g/day (8-13%) and P90 intakes increased between 5-9 g/day (9-14%). The increases in mean and P90 consumer dietary intakes of oleic acid are within the normal daily variation of intakes. The major contributor to oleic acid intakes is oils, ranging between 42-65% across the population groups assessed. This major contributor doesn't change when SHO safflower oils are substituted into the diet, and the top end of the range increases to 69% contribution.

As the addition of SHO safflower oil makes little to no difference to oleic acid intakes it is

concluded that consumption of SHO safflower will not pose a nutritional concern to the Australian and New Zealand populations.

Contents

1. Introduction

Application A1156 seeks to amend the *Australia New Zealand Food Standards Code* (the Code) to allow for the inclusion of food derived from two lines of genetically modified super high oleic (SHO) safflower. The OECD Unique Identifiers for these sunflower lines are GOR-73226-6 and GOR-73240-2 (herein referred to as SHO safflower). As SHO safflower may be available for human consumption, FSANZ has assessed the increase in dietary intake of oleic acid due to consumption of SHO safflower oil.

SHO safflower has been grown in Australia under limited and controlled conditions under Licence DIR158 from the Office of the Gene Technology Regulator. In addition to an increase in oleic acid, SHO safflower also contains decreased levels of linoleic acid and palmitic acid when compared with non-genetically modified safflower. The dietary intake assessment considers the intake of oleic acid from the current food supply (baseline intakes) and two scenarios to account for potential additional intake of oleic acid due to the introduction of SHO safflower oil.

2. Dietary intake assessment

2.1 Purpose

The purpose of this assessment is to estimate dietary intakes of oleic acid both currently and after the introduction of SHO safflower, should the application be approved. The general FSANZ methodology and approach to conducting dietary intake assessments is set out in *Principles and Practices of Dietary Exposure Assessment for Food Regulatory Purposes* (FSANZ, 2009).

2.2 Nutrient of interest

The assessment focusses on estimated dietary intakes of oleic acid.

2.3 Approach

Dietary intake assessments require data on the concentrations of the chemical of interest in the relevant foods, and consumption data for the foods that have been collected through a national nutrition survey.

The dietary intake of oleic was estimated using (1) current oleic acid concentrations in foods; (2) the potential increases in oleic acid concentrations in safflower oil through the introduction of SHO safflower oil to the Australian and New Zealand food supplies; and (3) food consumption data from the most recent Australian and New Zealand national nutrition surveys.

The dietary intake assessment was undertaken using FSANZ's dietary modelling computer program, Harvest[1]. The Harvest model used to assess dietary intakes was a 'raw commodity' model. This type of model allows a single concentration to be assigned to a group of foods (e.g. all apples) or specific foods (e.g. cow's milk, reduced fat cow's milk, low fat cow's milk) depending on the concentration data available. This model includes where the food is consumed in its own right (e.g. a glass of milk) or where the food was consumed as part of a mixed food (e.g. milk in a cup of tea, in custard, in a sauce etc.) using the Harvest recipe

[1] Harvest is FSANZ's custom-built platform to calculate dietary exposures.

database. This ensures the dietary intake of oleic acid from all sources of a food is included.

Food consumption data used

The food consumption data used for the dietary intake assessments were:

- 2002 New Zealand National Children's Nutrition Survey (2002 NZ CNS): a 24-hour recall survey of 3,275 New Zealand children aged 5-14 years, with a second 24-hour recall undertaken for 15% of respondents. The assessment only used data from Day 1 of the survey.
- 2008-09 New Zealand Adult Nutrition Survey (2008 NZ ANS): a 24-hour recall survey of 4,721 New Zealanders aged 15 years and above, with a second 24-hour recall undertaken for 25% of respondents. The assessment only used data from Day 1 of the survey.
- 2011-12 Australian National Nutrition and Physical Activity Survey (2011-12 NNPAS), a component of the 2011-13 Australian Health Survey (2011-13 AHS): a 24-hour recall survey of 12,153 Australians aged 2 years and above, with a second 24-hour recall undertaken for 64% of respondents. Only those respondents who had two days of food consumption data (n=7,735) were used in the assessment of dietary intakes (ABS, 2015).

Dietary intake assessments based on food consumption data from national nutrition surveys provide the best estimation of actual consumption of a food and the resulting estimated dietary intake assessment for the Australian and New Zealand populations. However, national nutrition survey data have some limitations. The design of these nutrition surveys vary and the key attributes of each, including survey limitations, are set out in Appendix 2.

As discussed in the A1156 Supporting Document 1 (SD1), there are no established health based guidance values for oleic acid and no target or at-risk populations were identified. SHO safflower oil has the potential to be consumed by all sectors of the Australian and New Zealand populations. For Australia, the population group used for the dietary intake assessment was the population aged 2 years and above. For New Zealand the population groups were children (aged 5-14 years) and adults (aged 15 years and above).

Concentrations of oleic acid in foods

Concentrations of oleic acid in the Australian and New Zealand food supplies were determined primarily using data from Australia's reference nutrient database (Food Standards Australia New Zealand, due for release in 2018)(Food Standards Australia New Zealand, due for release in 2018). As oleic acid data in the USDA standard reference food composition database (National Agricultural Library, 2018) are more comprehensive, these data were used where FSANZ data were missing or the FSANZ value was zero (see Appendix 1). New Zealand food composition data were not used in this assessment.

The concentration of oleic acid in conventional safflower oil used in the dietary intake assessment was 759 g/kg, and for the SHO safflower lines was 921 g/kg (mean concentration of the two SHO Events). These safflower oil concentrations were provided by the Applicant.

Scenarios assessed

To estimate the potential changes in oleic acid intake in Australia and New Zealand from the introduction of SHO safflower, FSANZ used four scenarios to model potential dietary oleic acid intakes. The scenarios included current or baseline estimates (using concentration data from FSANZ and USDA as explained above) and then scenarios assessing intakes when regular vegetable oil or safflower oil were substituted with SHO safflower oil. The four scenarios were:

1. *'Baseline (unspecified oils are vegetable oil)'*: Unspecified oil (vegetable oil reported as consumed in a nutrition survey without any specific information about its source) was assumed to be a generic vegetable oil
2. *'Baseline (unspecified oils are safflower oil)'*: Unspecified oil (vegetable oil reported as consumed in a nutrition survey without any specific information about its source) was assumed to be safflower oil
3. *'100% SHO safflower oil'*: SHO safflower oil replaces all (100%) conventional safflower oil that consumers reported eating in the national nutrition surveys. (Unspecified oils remain as vegetable oil).
4. *'100% SHO safflower oil plus 100% SHO unspecified oils'*: SHO safflower oil replaces all (100%) of conventional safflower oil and 100% of any unspecified oil that consumers reported eating in the national nutrition surveys.

All four scenarios include where oil is reported as consumed on its own or as an ingredient in mixed foods or dishes (e.g. in salad dressing, steak fried in oil, fried rice etc.) based on FSANZ's recipe data from the Harvest Raw Commodity model. Safflower oil was the only safflower commodity used in this assessment as no consumption of other safflower products (i.e. safflower meal or safflower seed) was reported in the nutrition surveys for Australia and New Zealand.

Assumptions and limitations of the dietary intake assessment

The aim of the dietary intake assessment was to make the best estimate of dietary oleic acid intake. Where significant uncertainties in the data exist, FSANZ uses conservative assumptions to ensure that the estimated dietary intake is not an underestimate (for example, assuming that all safflower oil consumption is SHO safflower oil will over-estimate the potential population increases in oleic acid intakes).

Assumptions made in the dietary intake assessment included:

- Oleic acid intakes are from food only; oleic acid intake from complementary or other medicines (e.g. dietary supplements) is not included
- The dietary intake assessments used the concentrations of oleic acid in SHO safflower oil and conventional safflower oil as provided by the Applicant. The variability and uncertainty around these concentrations are unknown
- All conventional safflower oil reported as consumed is replaced by SHO safflower oil (*100% SHO safflower oil* scenario)
- All unspecified oils currently in the marketplace are replaced by SHO safflower oil (*100% SHO safflower oil plus 100% SHO unspecified oil* scenario)
- The fatty acid profile of SHO safflower in the marketplace is the same as the Applicant's data

- Where a food was assigned an oleic acid concentration, this concentration was carried over to mixed foods where the food had been used as an ingredient (e.g. meat used in homemade casseroles, milk in homemade cakes etc.)
- The oleic acid composition of foods in the USDA standard reference food composition database reflect the oleic acid composition of the same foods in the Australian and New Zealand food supplies
- The oleic acid composition of the New Zealand food supply is the same as the oleic acid composition of the Australian food supply.

In addition to the specific assumptions made in relation to this dietary intake assessment, there are a number of limitations associated with the nutrition surveys per se. A discussion of these limitations is included in Section 6 of the *Principles and Practices of Dietary Exposure Assessment for Food Regulatory Purposes* (FSANZ, 2009).

Dietary intake assessment results and conclusion

Australia

The *Baseline (unspecified oils are vegetable oil)* estimated mean and 90th percentile (P90) consumer dietary intakes of oleic acid for Australians aged 2 years and above are 26 g/day and 42 g/day respectively.

For the *100% SHO safflower oil* scenario there are no increases in the estimated mean and P90 consumer dietary intakes of oleic acid from *'Baseline (unspecified oils are vegetable oil)* (see Table 1 and Figure 1).

For the *100% SHO safflower oil plus 100% SHO unspecified oils* scenario for Australians aged 2 years and above, mean and P90 consumer dietary intakes of oleic acid increase above *Baseline (unspecified oils are safflower oil)* by 3 g/day (8%) and 5 g/day (9%) to 34 g/day and 56 g/day respectively (see
and Figure 1). Although the increase in oleic concentrations in the safflower oil shift the distribution of oleic acid intake upwards, the increases are within the normal daily variation of intakes.

New Zealand

The *Baseline (unspecified oils are vegetable oil)* estimated mean and P90 consumer dietary intakes of oleic acid for New Zealand children aged 5-14 years are 26 g/day and 43 g/day respectively. Estimated mean and P90 consumer dietary intakes of oleic acid for New Zealand adults aged 15 years of age and above are 29 g/day and 51 g/day respectively.

For the *100% SHO safflower oil s*cenario there are no increases above the *Baseline (unspecified oils are vegetable oil)* in the estimated mean and P90 consumer dietary intakes of oleic acid for New Zealand children aged 5-14 years and adults aged 15 years and above (see
and Figure 2).

For the *100% SHO safflower oil plus 100% SHO unspecified oils* scenario for New Zealand children aged 5-14 years of age, mean and P90 consumer dietary intakes increase above *Baseline (unspecified oils are safflower oil)* by 4 g/day (13%) and 9 g/day (14%) to 40 g/day and 70 g/day respectively. For New Zealand adults aged 15 years and above, increases in mean and P90 consumer dietary intake of oleic acid above *Baseline (unspecified oils are safflower oil)* are 4 g/day (11%) and 8 g/day (12%) to 42 g/day and 76 g/day respectively (see
and Figure 2). Although the increase in oleic concentrations in the safflower oil shift the

distributions of oleic acid intake for both New Zealand children and adults upwards, the increases are within the normal daily variation of intakes.

In the *100% SHO safflower oil plus 100% SHO unspecified oils* scenario the true increase in population intakes of oleic acid would likely to be lower due to the conservative assumption that all unspecified oils consumed are safflower oil. The intake estimates are intentionally highly protective of consumers in order to make a determination about whether there is a public health and safety concern associated with SHO safflower oil increasing oleic acid intakes in Australia and New Zealand or not.

Table 1: Estimated mean and 90th percentile (P90) oleic acid dietary intakes for Australia and New Zealand under two different baseline assumptions and following the replacement of all safflower oil with SHO safflower oil

Country	Age group	Estimated dietary intake of oleic acid (g/day)			
		Scenario: unspecified oils are assumed to be a mix of vegetable oils			
		Mean		P90	
		Baseline	100% SHO safflower oil scenario	Baseline	100% SHO safflower oil scenario
Australia*	2 years and above	26	26	42	42
New Zealand∇	5-14 years	26	26	43	43
	15 years and above	29	29	51	51
Country	**Age group**	**Scenario: unspecified oils are assumed to be safflower oil (alternate, higher estimate)**			
		Mean		P90	
		Baseline	100% SHO safflower oil plus 100% SHO unspecified oils scenario	Baseline	100% SHO safflower oil plus 100% SHO unspecified oils scenario
Australia*	2 years and above	31	34	51	56
New Zealand∇	5-14 years	35	40	62	70
	15 years and above	38	42	67	76

* 2011-12 Australian National Nutrition and Physical Activity Survey (n = 7,735). Based on consumption data from respondents with two days of data only. All respondents were consumers of oleic acid.

∇ 2002 New Zealand National Children's Nutrition Survey (n = 3,275) and the 2008–09 New Zealand Adult Nutrition Survey (n = 4,721). Based on day 1 consumption data only from all respondents. All respondents were consumers of oleic acid.

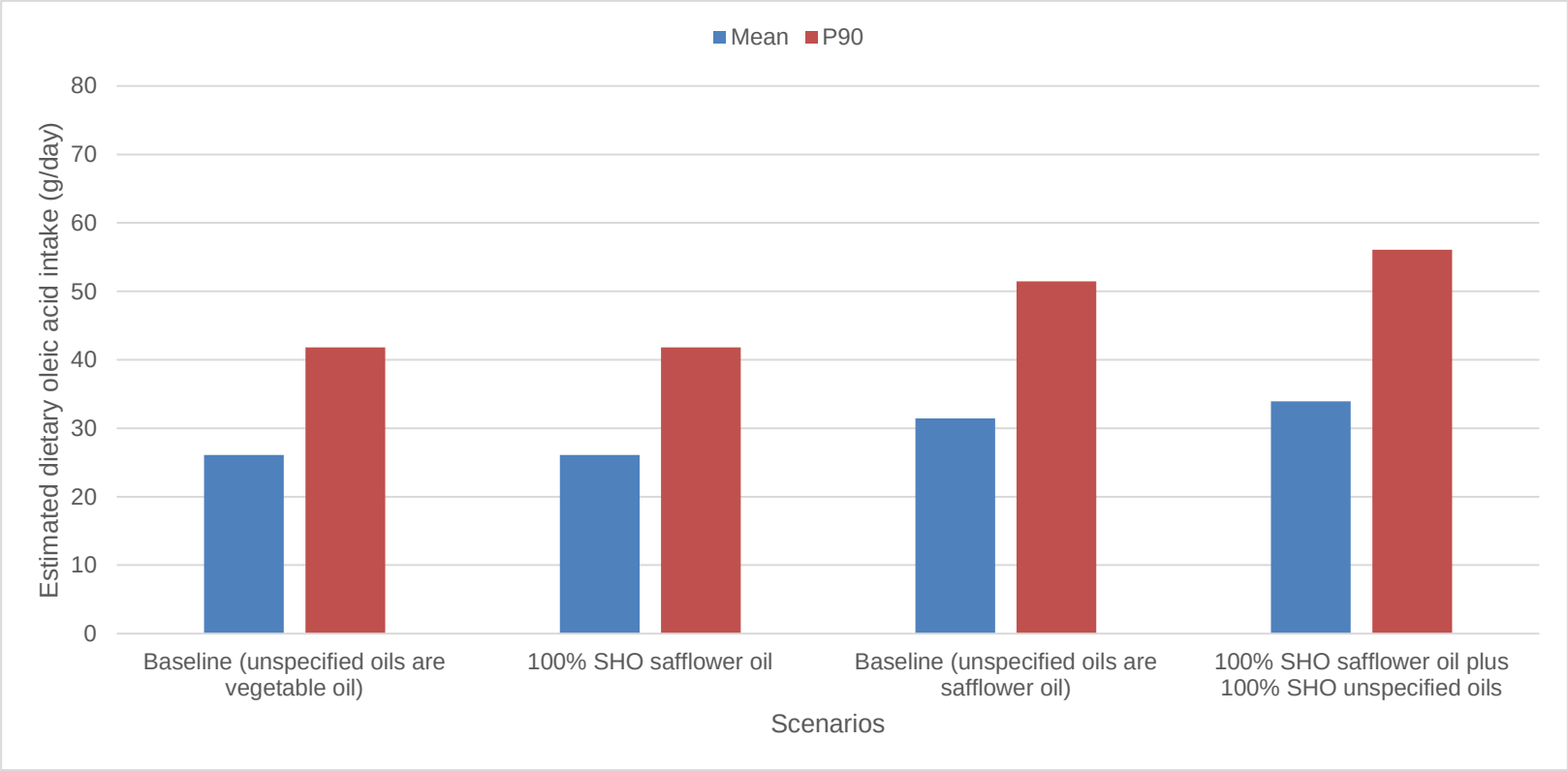


Figure 1: Estimated mean and P90 oleic acid intakes for Australians aged 2 years and above

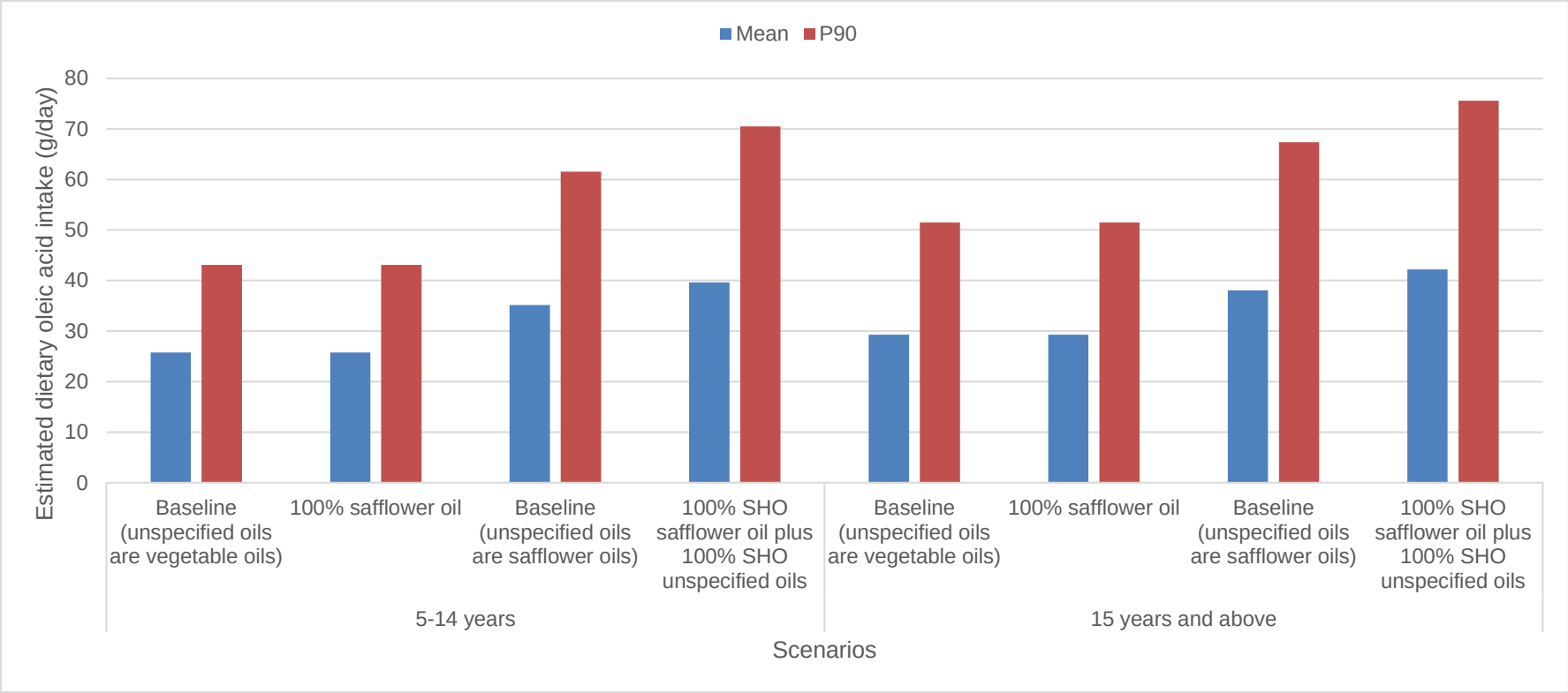


Figure 2: Estimated mean and P90 oleic acid intakes for New Zealand population groups

Major foods contributing to oleic acid dietary intakes

Major contributing foods are defined as those that contribute ≥5% to dietary intakes of oleic acid.

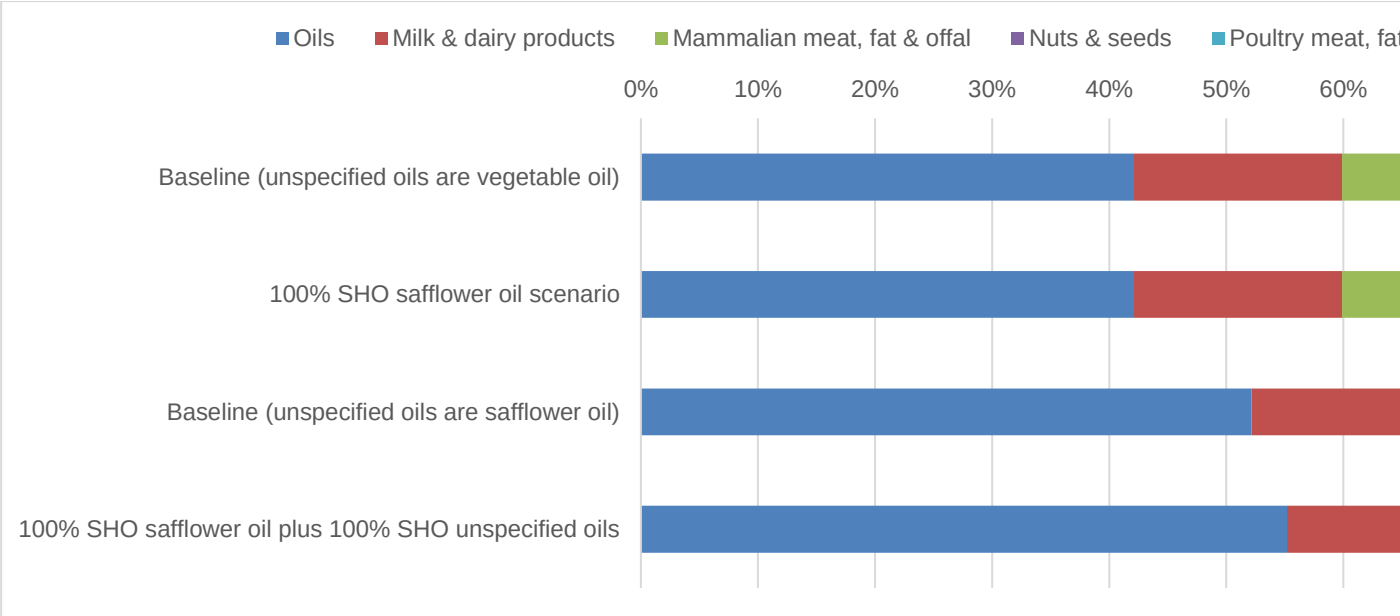
Australia

At *Baseline (unspecified oils are vegetable oil)* for Australians aged 2 years and above, Oils (42%) are the major contributing food category to oleic acid intakes from the diet. Within this category, Unspecified oil (25%) and Olive oil (10%) are the main contributors. Other major contributing food categories / groups to oleic acid intakes are Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (17%), Mammalian meat, fat and offal (13%) (Cattle meat 7%), Nuts and seeds (8%) and Poultry meat, fat and offal (7%). For Australians, the major contributors to oleic acid to the diet do not change with the replacement of conventional safflower oil with SHO safflower oil in the *100% SHO safflower oil* scenario (see Table 1 and **Error! Reference source not found.**).

At *Baseline (unspecified oils are safflower oil)* for Australians aged 2 years and above, the major contributors to oleic acid intakes are Oils (52%) (Unspecified oils 37%, Olive oil 9%), Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (14%), Mammalian meat, fat and offal (11%) (Cattle meat 5%), Nuts and seeds (7%) and Poultry meat (6%). When safflower oil is replaced with SHO safflower oil (including unspecified oil) in the *100% SHO safflower oil plus 100% SHO unspecified oils* scenario, the major contributors to oleic acid in the diet remain the same with small changes in percentage contribution. Oils contributed 55% (Unspecified oils 42%; Olive oil 8%), Cattle milk including liquid milks, cheeses, yoghurt, cream and butter 13%, Mammalian meat, fat and offal 10% (Cattle meat 5%), Poultry meat 6%, and Nuts and seeds 6% (see Table 1 and **Error! Reference source not found.**).

New Zealand

At *Baseline (unspecified oils are vegetable oil)* for New Zealand children aged 5-14 years, the major contributors to oleic acid to the diet are Oils (53%) (Unspecified oil 44%), Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (19%), Mammalian meat, fat and offal (11%) (Cattle meat 7%) and Nuts and seeds (6%). Similarly, at *Baseline (unspecified oils are vegetable oil)* for New Zealand adults aged 15 years and above, the major contributors to oleic acid in the diet are Oils (47%) (Unspecified oil 36%), Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (16%), Mammalian meat, fat and offal (13%) (Cattle meat 7%) and Nuts and seeds (7%). In both New Zealand national nutrition surveys, the major contributors to oleic acid in the diet do not change with the replacement of conventional safflower oil with SHO safflower oil in the *100% SHO safflower oil* scenario (see

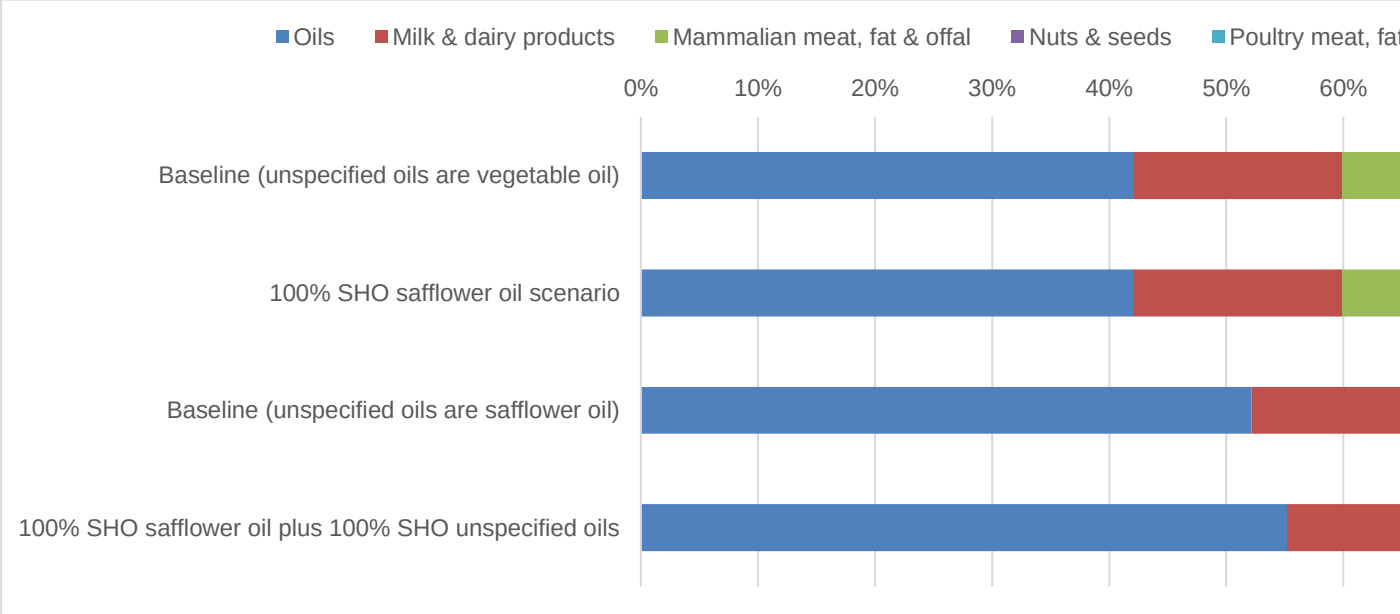


* Other includes amphibians and reptiles, cereals, coffee and guarana, fruits, honey, poultry eggs, seafood, sugars and cocoa products, teas, vegetables, herbs and spices, miscellaneous foods.

Figure 3: Major food contributors to oleic acid dietary intakes for Australians aged 2 years and above, based on Day 1 and 2 of the 2011-12 NNPAS

Table 2 and **Error! Reference source not found.**).

At *Baseline (unspecified oils are safflower oil)* for New Zealand children aged 5-14 years, the major contributors to oleic acid in the diet are Oils (65%) (Unspecified oil 59%), Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (14%) and Mammalian meat, fat and offal (8%) (Cattle meat 5%). In the *100% SHO safflower oil plus 100% SHO unspecified oils* scenario, the major contributors to oleic acid in the diet are similar: Oils (69%) (Unspecified oil 64%) and Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (12%) and Mammalian meat, fat and offal (7%), however Cattle meat is no longer a major contributor (see

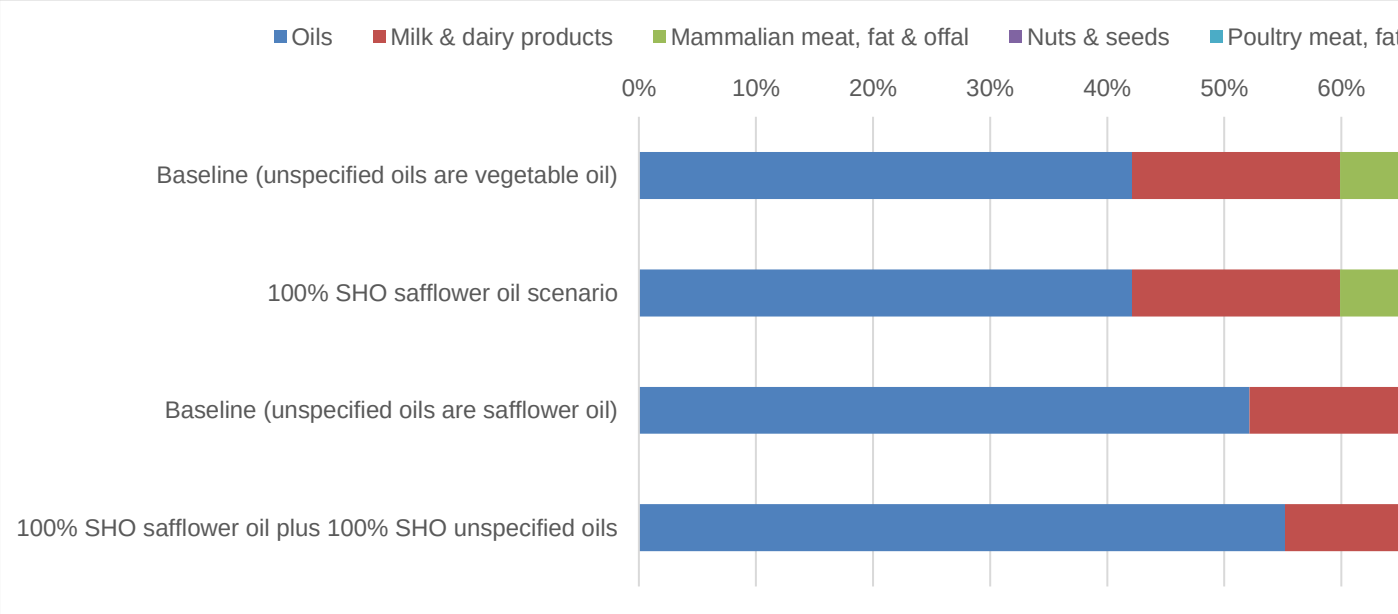


***** Other includes amphibians and reptiles, cereals, coffee and guarana, fruits, honey, poultry eggs, seafood, sugars and cocoa products, teas, vegetables, herbs and spices, miscellaneous foods.

Figure 3: Major food contributors to oleic acid dietary intakes for Australians aged 2 years and above, based on Day 1 and 2 of the 2011-12 NNPAS

Table 2 and **Error! Reference source not found.**).

At *Baseline (unspecified oils are safflower oil)* for New Zealand adults aged 15 years and above, the major contributors to oleic acid in the diet are Oils (59%) (Unspecified oil (51%)), Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (12%), Mammalian meat, fat and offal (10%) (Cattle meat 5%) and Nuts and seeds (5%). In the *100% SHO safflower oil plus 100% SHO unspecified oils* scenario, the major contributors to oleic acid in the diet remain the same with small variations in percentage contributions (Oils (63%) (Unspecified oil 56%), Cattle milk including liquid milks, cheeses, yoghurt, cream and butter (11%), Mammalian meat, fat and offal (9%) (Cattle meat 5%) and Nuts and seeds (5%)) (see



***** Other includes amphibians and reptiles, cereals, coffee and guarana, fruits, honey, poultry eggs, seafood, sugars and cocoa products, teas, vegetables, herbs and spices, miscellaneous foods.

Figure 3: Major food contributors to oleic acid dietary intakes for Australians aged 2 years and above, based on Day 1 and 2 of the 2011-12 NNPAS

Table 2 and Figure 5).

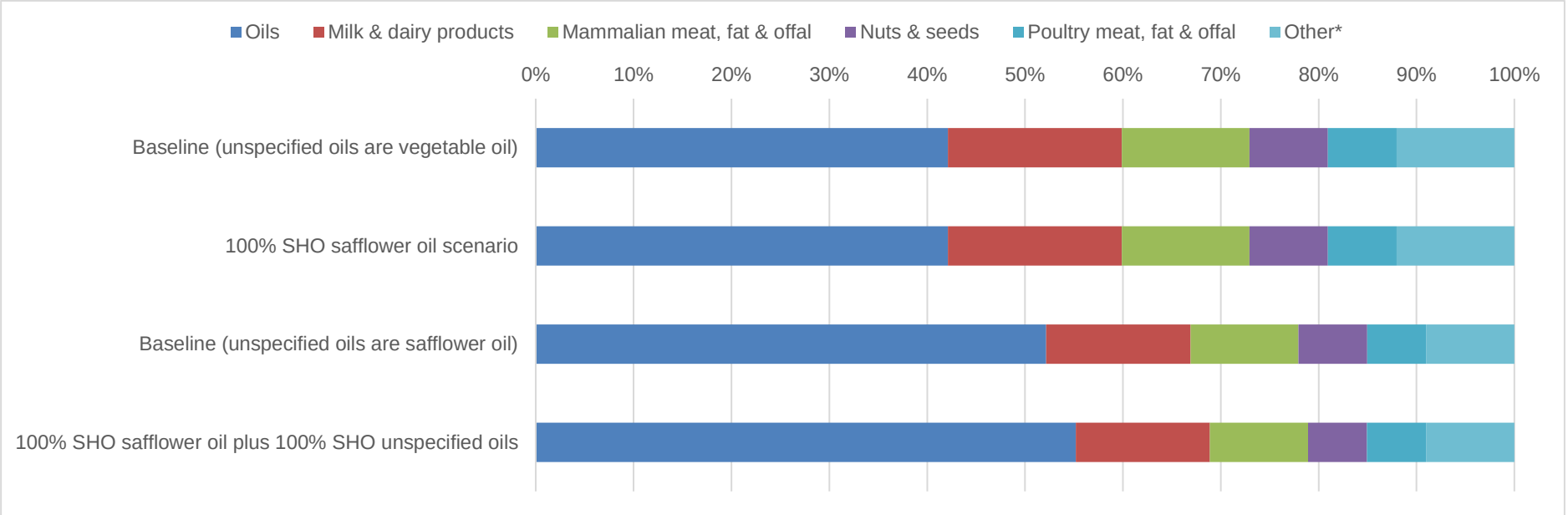
Conclusion

As discussed in the A1156 SD1, oleic acid is non-essential and there are no health based guidance values. As the addition of SHO safflower oil makes little to no difference to oleic acid intakes and food contributors it is concluded that consumption of SHO safflower will not pose a nutritional concern to the Australian and New Zealand populations.

Table 1: Food contributors to oleic acid dietary intakes for Australians aged 2 years and above, based on Day 1 and 2 of the 2011-12 NNPAS

Classification Name	% Contribution			
	Baseline (unspecified oils are vegetable oil)	100% SHO safflower oil scenario	Baseline (unspecified oils are safflower oil)	100% SHO safflower oil plus 100% SHO unspecified oils scenario
Amphibians & reptiles	0	0	0	0
Cereals	4	4	3	3
Coffee & guarana	<1	<1	<1	<1
Fruits	2	2	2	2
Honey	0	0	0	0
Mammalian meat, fat & offal	13	13	11	10
Cattle meat	7	7	5	5
Milk & dairy products	18	18	15	14
Cattle milk including liquid milks, cheeses, yoghurt, cream and butter	17	17	14	13
Miscellaneous foods	<1	<1	<1	<1
Nuts & seeds	8	8	7	6
Peanut (Groundnut)	2	2	2	2
Oils	42	42	52	55
Unspecified oil	25	25	37	42
Olive oil, refined	10	10	9	8
Poultry eggs	2	2	2	2
Poultry meat, fat & offal	7	7	6	6
Chicken meat	5	5	4	4
Seafood	2	2	1	1
Sugars & cocoa products	<1	<1	<1	<1
Teas	<1	<1	<1	<1
Vegetables, herbs & spices	1	1	<1	<1

Note: grey shading indicates a major contributing food category or food group (≥5%)



***** Other includes amphibians and reptiles, cereals, coffee and guarana, fruits, honey, poultry eggs, seafood, sugars and cocoa products, teas, vegetables, herbs and spices, miscellaneous foods.

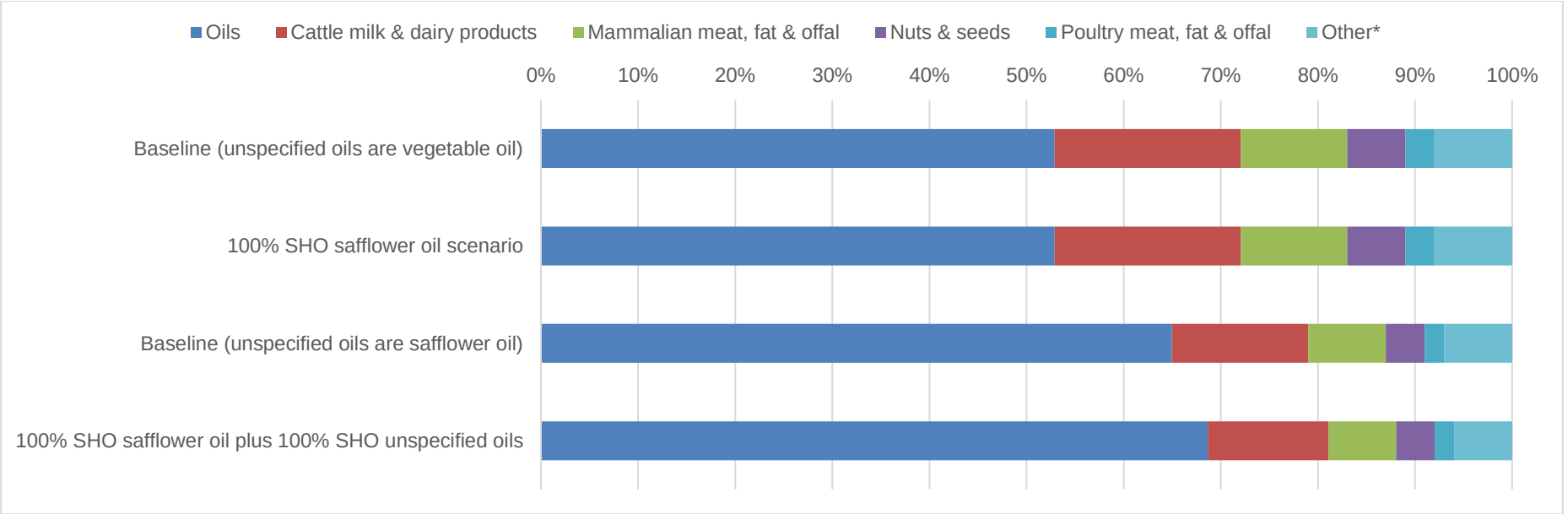
Figure 3: Major food contributors to oleic acid dietary intakes for Australians aged 2 years and above, based on Day 1 and 2 of the 2011-12 NNPAS

*Table 2: Food contributors to oleic acid dietary intakes for New Zealand population groups, based on Day 1 of the national nutrition survey, for general population groups**

Classification Name	% Contribution							
	5-14 years				15 years and above			
	Baseline (unspecified oils are vegetable oil)	100% SHO safflower oil scenario	Baseline (unspecified oils are safflower oil)	100% SHO safflower oil plus 100% SHO unspecified oils' scenario	Baseline (unspecified oils are vegetable oil)	100% SHO safflower oil scenario	Baseline (unspecified oils are safflower oil)	100% SHO safflower oil plus 100% SHO unspecified oils' scenario
Amphibians & reptiles	0	0	0	0	0	0	0	0
Cereals	3	3	2	2	3	3	3	2
Coffee & guarana	<1	<1	<1	<1	<1	<1	<1	<1
Fruits	<1	<1	<1	<1	2	2	2	2
Honey	0	0	0	0	0	0	0	0
Mammalian meat, fat & offal	11	11	8	7	13	13	10	9
Cattle meat	7	7	5	4	7	7	5	5
Milk & dairy products	19	19	14	12	16	16	13	11
Cattle milk including liquid milks, cheeses, yoghurt, cream and butter	19	19	14	12	16	16	12	11
Miscellaneous foods	<1	<1	<1	<1	<1	<1	<1	<1
Nuts & seeds	6	6	4	4	7	7	5	5
Peanut (Groundnut)	4	4	3	3	3	3	2	2
Oils	53	53	65	69	47	47	59	63
Unspecified oil	44	44	59	64	36	36	51	56
Olive oil, refined	3	3	2	2	4	4	3	3
Poultry eggs	2	2	1	1	3	3	2	2
Poultry meat, fat & offal	3	3	2	2	4	4	3	3
Chicken meat	3	3	2	2	4	4	3	3
Seafood	1	1	1	<1	2	2	2	2
Sugars & cocoa products	<1	<1	<1	<1	<1	<1	<1	<1
Teas	<1	<1	<1	<1	<1	<1	<1	<1
Vegetables, herbs & spices	<1	<1	<1	<1	<1	<1	<1	<1

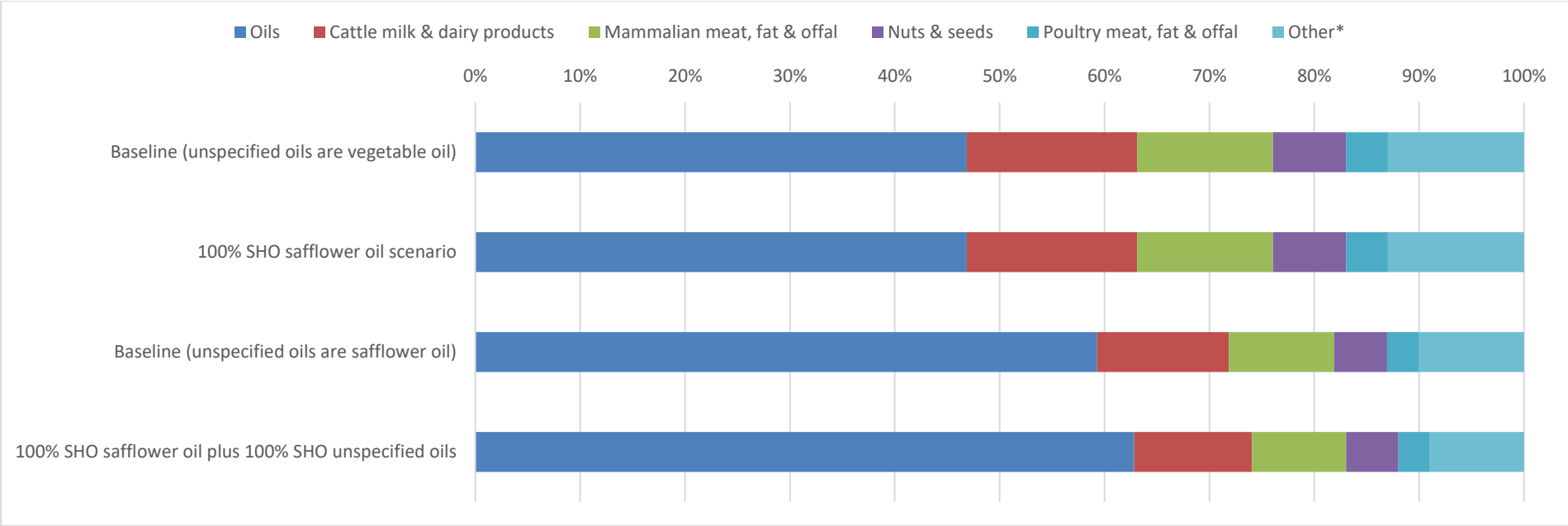
Note: grey shading indicates a major contributing food category or food group (≥5%)

* 2002 New Zealand National Children's Nutrition Survey (2002 NZ CNS) 5-14 years; 2008/09 New Zealand Adult Nutrition Survey (2008 NZ ANS) 15 years and above



*Other includes amphibians and reptiles, cereals, coffee and guarana, fruits, honey, poultry eggs, seafood, sugars and cocoa products, teas, vegetables, herbs and spices, miscellaneous foods

Figure 4: Food contributors to oleic acid dietary intakes for New Zealand, based on Day 1 of the 2002 NZ CNS, for children aged 5-14 years



*Other includes amphibians and reptiles, cereals, coffee and guarana, fruits, honey, poultry eggs, seafood, sugars and cocoa products, teas, vegetables, herbs and spices, miscellaneous foods

Figure 5: Food contributors to oleic acid dietary intakes for New Zealand, based on Day 1 of the 2008 NZ ANS, for adults aged 15 years and above

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Appendix 1: Oleic acid concentrations used for the dietary intake assessment

Table A1.1: Oleic acid concentrations used for the dietary intake assessment

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
AP0001	Honey	0	FSANZ
AR	Amphibians and reptiles (including Lizards, Goannas, Snakes)	5.4	FSANZ
AR0990	Frogs	0.44	USDA
AR0993	Turtles	0.73	USDA
CF	Cereal grain fractions not listed below	6.3	FSANZ
CF0081	Cereal brans, processed	6.3	FSANZ
CF0641	Barley Flour	3.4	FSANZ
CF0645	Maize meal	4.0	FSANZ
CF0654	Wheat bran, processed	6.3	FSANZ
CF1210	Wheat germ	8.7	FSANZ
CF1211	Wheat flour	1.2	FSANZ
CF1212	Wheat wholemeal	2.3	FSANZ
CF1250	Rye flour	2.6	FSANZ
CF1251	Rye wholemeal	2.6	FSANZ
CF1255	Maize flour	4.0	FSANZ
CF1266	Rice Flour	16	USDA
CF1641	Buckwheat Flour	2.0	FSANZ
CM	Early milling products not listed below	6.3	FSANZ
CM0649	Rice, husked	10	FSANZ
CM0654	Wheat bran, unprocessed	6.3	FSANZ
CM1205	Rice, polished	16	USDA
CM2000	Psyllium husks	3.7	FSANZ
DF	Dried fruits not listed below	0.12	USDA
DF0013	Cherries, dried	1.8	USDA
DF0014	Prunes	0.14	USDA
DF0020	Blueberries, dried	4.0	USDA
DF0021	Currants, Black, Red, White, dried	0.45	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
DF0226	Apples, dried	0.12	USDA
DF0230	Pear, dried	1.3	USDA
DF0240	Apricots, dried	0.74	FSANZ
DF0245	Nectarine, dried	2.7	USDA
DF0247	Peach, dried	2.7	USDA
DF0264	Blackberries, dried	4.0	USDA
DF0265	Cranberry, dried	1.5	FSANZ
DF0269	Dried grapes (including Currants, dried, Sultanas, dried, Raisins, dried)	0.12	USDA
DF0272	Raspberries, Red, Black, dried	4.0	USDA
DF0275	Strawberry, dried	4.0	USDA
DF0295	Dates, dried or dried and candied	0.35	USDA
DF0297	Figs, dried or dried and candied	1.0	FSANZ
DF0327	Banana, dried	1.0	USDA
DF0345	Mango, dried	1.0	USDA
DF0351	Papaya, dried	1.0	USDA
DF0353	Pineapple, dried	1.0	USDA
DF0355	Pomegranate, dried	1.0	USDA
DF0999	Goji Berry, Dried	2.6	FSANZ
DH	Dried Herbs not listed below	7.6	USDA
DH0722	Basil, dry	11	USDA
DH0723	Bay leaves, dry	15	USDA
DH0736	Marjoram, dry (Oregano, dry)	9.4	USDA
DH0738	Mints, dry	1.8	USDA
DH0740	Parsley, dried	7.6	USDA
DH0741	Rosemary, dry	27	USDA
DH0743	Sage, dry	18	USDA
DH0750	Thyme, dry	4.7	USDA
DH0756	Cilantro, leaves, dry	22.	USDA
DM0305	Olives, processed	147	FSANZ
DM0659	Sugar cane molasses	0	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
DM0715	Cocoa powder	47	FSANZ
DM1215	Cocoa butter	47	FSANZ
DM1216	Cocoa mass	47	FSANZ
DT	Teas (including Roselle (calyx and flowers), dry, Camomile (including scented mayweed), Lemon verbena (dry leaves), Lime blossoms, Mate (dry leaves), Tea Green, Black (black, fermented and dried), Dokudami, Forest berry herb, Lemon iron bark, Rooibos)	7.6	USDA
DV	Dried vegetables not listed below	2.0	USDA
DV0381	Garlic, dried	1.1	USDA
DV0384	Leek, dried	0.29	USDA
DV0385	Onion, dried	2.0	USDA
DV0444	Chilli, powder/dried	31	USDA
DV0445	Peppers, sweet, dried (Paprika)	16	USDA
DV0448	Tomato, dried	4.8	USDA
DV0450	Mushrooms, dried	1.5	USDA
DV0577	Carrot, dried	0.57	USDA
DV0589	Potato, dried	0.040	USDA
FB	Berries and other small fruits not listed below	0.42	USDA
FB0020	Blueberries	0.47	USDA
FB0021	Currants, Black, Red, White	0.56	USDA
FB00212	Currants, Black	0.56	USDA
FB00213	Currants, Red, White	0.28	USDA
FB0264	Blackberries	0.44	USDA
FB0265	Cranberry	0.18	USDA
FB0266	Dewberries (including Olallie berry, Youngberry)	0.23	USDA
FB02661	Boysenberry	0.23	USDA
FB02662	Loganberry	0.28	USDA
FB0267	Elderberries	0.80	USDA
FB0268	Gooseberry	0.51	USDA
FB0269	Grapes (including Grapes, for wine)	0.07	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
FB0271	Mulberries	0.41	USDA
FB0272	Raspberries, Red, Black	0.59	USDA
FB0275	Strawberry	0.42	USDA
FC	Citrus fruits not listed below	0.20	USDA
FC0003	Mandarins	0.53	USDA
FC00032	Clementine	0.53	USDA
FC00033	Tangelo	0.53	USDA
FC00034	Tangerine	0.53	USDA
FC00035	Tangors	0.53	USDA
FC0004	Oranges, Sweet, Sour (Bigarade, Chinotto, Chironja)	0.20	USDA
FC0203	Grapefruit	0.18	USDA
FC0204	Lemon	0.10	USDA
FC0205	Lime	0.16	USDA
FC0210	Australian blood lime	4.5	FSANZ
FC0211	Australian desert lime	4.5	FSANZ
FC0212	Australian round lime	4.5	FSANZ
FI	Tropical fruits with inedible peel not listed below	0.22	USDA
FI0326	Avocado	86	FSANZ
FI0327	Banana (includes banana dwarf)	0.22	USDA
FI0329	Bread fruit	0.32	USDA
FI0331	Cherimoya	0.21	USDA
FI0332	Custard apple	0.80	FSANZ
FI0335	Feijoa (Pineapple guava)	0.56	USDA
FI0336	Guava	0.82	USDA
FI0338	Jackfruit	1.3	USDA
FI0341	Kiwifruit (Chinese gooseberry, Strawberry peach)	0.47	USDA
FI0343	Litchi	1.2	USDA
FI0344	Mammey apple	2.1	USDA
FI0345	Mango	0.75	USDA
FI0350	Papaya (Pawpaw, Papaw)	0.34	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
FI0351	Passionfruit (Granddilla)	0.86	USDA
FI0353	Pineapple	0.12	USDA
FI0354	Plantain	0.21	USDA
FI0355	Pomegranate	0.77	USDA
FI0356	Prickly pear (Indian fig)	0.72	USDA
FI0359	Sapodilla	5.2	USDA
FI0360	Sapote, Black	0.95	USDA
FI0361	Sapote, Green	0.95	USDA
FI0362	Sapote, Mammey	0.95	USDA
FI0363	Sapote, White	0.95	USDA
FI0365	Soursop (Guanabana)	0.85	USDA
FI0368	Sugar apple (Sweetsop)	1.1	USDA
FI0369	Tamarind	1.8	USDA
FP	Pome fruits (including Medlar)	0.070	USDA
FP0226	Apple	0.070	USDA
FP0227	Crab-apple	0.11	USDA
FP0228	Loquat (Japanese medlar)	0.080	USDA
FP0230	Pear (including Nashi pear, Oriental pear, Sand pear)	0.81	USDA
FP0231	Quince	0.36	USDA
FS	Stone fruits not listed below	0.65	USDA
FS0013	Cherries (including Morello)	0.47	USDA
FS00131	Cherry, Sour	0.81	USDA
FS00132	Cherry, Sweet	0.47	USDA
FS0014	Plums (including prunes)	1.3	USDA
FS0240	Apricot	1.7	USDA
FS0245	Nectarine	0.86	USDA
FS0247	Peach	0.65	USDA
FS0249	Sloe (American plum)	1.3	USDA
FS0250	Japanese apricot	1.7	USDA
FT	Tropical fruits with edible peel not listed below	0.66	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
FT0287	Barbados cherry (Acerola)	0.81	USDA
FT0289	Carambola	0.30	USDA
FT0295	Date	0.35	USDA
FT0297	Fig	0.66	USDA
FT0303	Kumquats (including Murami, Nagami)	1.2	FSANZ
FT0305	Olives	147	FSANZ
FT0307	Persimmon, Japanese (including Chinese & Kaki fruit)	0.37	USDA
GC	Cereal grains not listed below	3.3	FSANZ
GC0640	Barley (including Barley, for beer)	3.4	FSANZ
GC0641	Buckwheat	2.0	FSANZ
GC0645	Maize (corn)	4.0	FSANZ
GC0646	Millet	9.0	USDA
GC0647	Oats	41	FSANZ
GC0649	Rice	10	FSANZ
GC0650	Rye	2.6	FSANZ
GC0651	Sorghum (Chicken corn, Dari seed, Durra, Feterita)	9.2	USDA
GC0654	Wheat (including Emmer, Spelt)	3.3	FSANZ
GC0656	Popcorn	4.0	FSANZ
GS0658	Sorgo or Sorghum, Sweet	9.2	USDA
HH	Herbs not listed below	2.9	USDA
HH0722	Basil	0.88	USDA
HH0727	Chives (including Chinese chives, Garlic chives)	0.95	USDA
HH0730	Dill	8.0	USDA
HH0738	Mints	0.10	FSANZ
HH0740	Parsley	2.9	USDA
HH0741	Rosemary	10	USDA
HH0750	Thyme	0.81	USDA
HH0756	Cilantro, leaves	2.7	USDA
HH0761	Lemongrass	0.42	USDA
HS	Spices not listed below	135	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
HS0624	Celery seed	155	USDA
HS0730	Dill seed	94	USDA
HS0731	Fennel, seed	99	USDA
HS0771	Anise seed	98	USDA
HS0773	Caper buds	0.57	USDA
HS0774	Caraway seed	70	USDA
HS0775	Cardamom seed	8.5	USDA
HS0777	Cinnamon bark (including Cassia bark, Teypat)	2.5	USDA
HS0778	Cloves, buds	9.9	USDA
HS0779	Coriander, seed	135	USDA
HS0780	Cumin seed	136	USDA
HS0784	Ginger, root	1.2	USDA
HS0788	Mace	106	USDA
HS0789	Nutmeg	16	USDA
HS0790	Pepper, Black; White	6.5	USDA
HS0792	Pimento, fruit (Allspice fruit)	6.6	USDA
HS0794	Turmeric, root	1.3	USDA
HS0795	Vanilla, beans	0.080	USDA
HS0799	Wattle seed	15	FSANZ
HS0808	Saffron	3.9	USDA
IM	Molluscs not listed below	2.1	USDA
IM0107	Octopus	0.62	USDA
IM1000	Clams	0.60	USDA
IM1001	Cockles	0.60	USDA
IM1002	Cuttlefish	0.31	USDA
IM1003	Mussels	2.1	USDA
IM1004	Oysters	1.0	FSANZ
IM1005	Scallops	0.20	FSANZ
IM1007	Snails, Edible	2.1	USDA
IM1008	Squids	0.20	FSANZ

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
IM1011	Abalone (Paua)	0.80	FSANZ
IM1012	Pipis	0.60	USDA
MF	Fat, mammalian not listed below	243	FSANZ
MF0812	Cattle fat	243	FSANZ
MF0814	Goat fat	141	FSANZ
MF0818	Pig fat	307	FSANZ
MF0822	Sheep fat	196	FSANZ
ML	Mammalian milks not listed below	7.9	FSANZ
ML0812	Full fat cattle milk	7.9	FSANZ
ML08125	Cattle milk, low fat	0	FSANZ
ML08126	Cattle milk, reduced fat	2.7	FSANZ
MM	Mammalian meats not listed below	30	FSANZ
MM0014	Possum meat	1.9	FSANZ
MM0017	Wallaby meat	1.9	FSANZ
MM0810	Buffalo meat	8.0	FSANZ
MM0811	Camel meat (including Llama)	22	FSANZ
MM0812	Cattle meat (including Veal, Yak meat, Zebu meat)	30	FSANZ
MM0813	Deer meat	6.3	USDA
MM0814	Goat meat	18	FSANZ
MM0815	Hare meat	5.3	FSANZ
MM0816	Horse meat	13	USDA
MM0817	Kangaroo meat	2.3	FSANZ
MM0818	Pig meat	21	FSANZ
MM0819	Rabbit meat	5.3	FSANZ
MM0820	Reindeer meat	9.3	USDA
MM0822	Sheep meat (including Lamb, Mutton)	38	FSANZ
MM0823	Wild boar, meat	11	USDA
MM0824	Elk meat (including European moose meat)	1.4	USDA
MM0830	Echidna Meat	1.9	FSANZ
MO	Mammalian offal not listed below	60	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
MO00261	Deer kidney	3.0	USDA
MO00262	Deer liver	4.1	USDA
MO0098	Kidney of cattle, goats, pigs and sheep	3.0	USDA
MO0812	Cattle, edible offal of	60	USDA
MO08121	Cattle, kidney	3.0	USDA
MO08122	Cattle, liver	4.1	USDA
MO08161	Horse, kidney	30	USDA
MO08162	Horse, liver	4.1	USDA
MO0818	Pig, edible offal of	9.0	USDA
MO08181	Pig, kidney	9.7	USDA
MO08182	Pig, liver	4.6	USDA
MO08183	Pig, skin	64	USDA
MO0822	Sheep, edible offal of	61	USDA
MO08221	Sheep, kidney	3.6	USDA
MO08222	Sheep, liver	7.4	USDA
OC	Crude vegetable oils not listed below		
	Baseline (unspecified oils are vegetable oil) scenario	415	FSANZ
	100% SHO safflower oil scenario	415	FSANZ
	Baseline (unspecified oils are safflower oil) scenario	759	Applicant
	100% SHO safflower oil plus 100% SHO unspecified oils scenario	921$^{\nabla}$	Applicant
OC0305	Olive oil, crude	688	FSANZ
OC0495	Rape seed oil, crude	580	FSANZ
OC0541	Soya bean oil, crude	220	FSANZ
OC0645	Maize oil, crude	273	USDA
OC0665	Coconut oil, crude	63	USDA
OC0691	Cotton seed oil, crude	9.6	USDA
OC0696	Palm oil, crude	197	USDA
OC0697	Peanut oil, crude	487	FSANZ

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
OC0699	Safflower seed oil, crude		
	Baseline (unspecified oils are vegetable oil) scenario	759	Applicant
	100% SHO safflower oil scenario	921[▽]	Applicant
	Baseline (unspecified oils are safflower oil) scenario	759	Applicant
	100% SHO safflower oil plus 100% SHO unspecified oils scenario	921	Applicant
OC0700	Sesame seed oil, crude	393	USDA
OC0702	Sunflower oil, crude	275	FSANZ
OC1240	Palm kernel oil, crude	197	USDA
OR	Unspecified vegetable oil		
	Baseline (unspecified oils are vegetable oil) scenario	415	FSANZ
	100% SHO safflower oil scenario	415	FSANZ
	Baseline (unspecified oils are safflower oil) scenario	759	Applicant
	100% SHO safflower oil plus 100% SHO unspecified oils scenario	921[▽]	Applicant
OR0001	Linola oil, edible	183	USDA
OR0002	Linseed oil, crude	183	USDA
OR0269	Grapeseed Oil	198	FSANZ
OR0305	Olive oil, refined	688	FSANZ
OR0326	Avocado Oil	679	USDA
OR0485	Mustard Seed Oil	116	USDA
OR0495	Rape seed oil, edible	580	FSANZ
OR0539	Rice Bran Oil	389	FSANZ
OR0541	Soya bean oil, refined	220	FSANZ
OR0645	Maize oil, edible	273	USDA
OR0660	Almond Oil	647	FSANZ
OR0665	Coconut oil, refined	63	USDA
OR0669	Macadamia nut Oil	622	FSANZ
OR0691	Cotton seed oil, edible	9.6	USDA
OR0696	Palm oil, edible	197	USDA
OR0697	Peanut oil, edible	487	FSANZ

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
OR0699	Safflower seed oil, edible		
	Baseline (unspecified oils are vegetable oil) scenario	759	Applicant
	100% SHO safflower oil scenario	921	Applicant
	Baseline (unspecified oils are safflower oil) scenario	759	Applicant
	100% SHO safflower oil plus 100% SHO unspecified oils scenario	921[▽]	Applicant
OR0700	Sesame seed oil, edible	393	USDA
OR0702	Sunflower seed oil, edible	275	FSANZ
OR1240	Palm kernel oil, edible	197	USDA
PE	Poultry eggs, excluding chicken eggs	33	FSANZ
PE0840	Chicken eggs	33	FSANZ
PF	Poultry fat, excluding chicken fat	275	FSANZ
PF0840	Chicken fat	275	FSANZ
PF0841	Duck fat	287	FSANZ
PM	Poultry meats not listed below	21	FSANZ
PM0840	Chicken meat	21	FSANZ
PM0841	Duck meat	178	FSANZ
PM0842	Goose meat	167	USDA
PM0843	Guinea-fowl meat	20	USDA
PM0844	Partridge meat	63	USDA
PM0845	Pheasant meat	31	USDA
PM0846	Pigeon meat	112	FSANZ
PM0847	Quail meat	39	FSANZ
PM0848	Turkey meat	17	FSANZ
PM0850	Emu meat	6.4	FSANZ
PM0851	Ostrich meat	4.0	FSANZ
PM2003	Mutton-bird meat	31	USDA
PO	Poultry offal not listed below	11	USDA
PO0113	Poultry skin	153	FSANZ
PO0840	Edible offal of chicken not listed below	11	USDA
PO08401	Chicken liver only	11	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
PO08403	Chicken skin	153	FSANZ
PO0841	Edible offal of duck	6.5	USDA
PO08411	Duck skin	287	FSANZ
PO08421	Goose, liver	7.4	USDA
PO08471	Quail skin	153	FSANZ
PO0848	Edible offal of turkey	9.2	USDA
PO08481	Turkey skin	122	USDA
SB	Seed for beverages and sweets not listed below	0.30	FSANZ
SB0716	Coffee beans	0.30	FSANZ
SO	Oilseeds not listed below	60	FSANZ
SO0479	Mustard seed, Indian	97	FSANZ
SO0485	Mustard seed	97	FSANZ
SO0691	Cotton seed	66	USDA
SO0693	Linseed (Flax-seed)	74	USDA
SO0694	Mustard seed, Field (Indian colza, Indian rape seed)	97	FSANZ
SO0697	Peanut (Groundnut)	317	FSANZ
SO0698	Poppy seed	60	FSANZ
SO0699	Safflower seed	48	USDA
SO0700	Sesame seed	222	FSANZ
SO0702	Sunflower seed	97	FSANZ
SO0703	Peanut, whole	238	USDA
SO0711	Pumpkin seed	161	USDA
SO0900	Lotus seed	2.3	USDA
SO2004	Chia seed	22	USDA
TN	Tree nuts not listed below	305	FSANZ
TN0295	Cashew nut	310	FSANZ
TN0660	Almonds	305	FSANZ
TN0661	Brazil nut	217	FSANZ
TN0664	Chestnuts (Chinquapin)	4.1	USDA
TN0665	Coconut	16	FSANZ

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
TN0666	Hazelnuts (Filberts)	486	FSANZ
TN0667	Hickory nuts	320	USDA
TN0668	Japanese horse-chestnut	2.7	USDA
TN0669	Macadamia nuts (Bush nut, Queensland nut)	461	FSANZ
TN0672	Pecan	392	FSANZ
TN0673	Pine nuts (Pignolia or Pignoli, Pinocchi, Pinon nut)	222	FSANZ
TN0675	Pistachio nuts	262	FSANZ
TN0678	Walnuts	120	FSANZ
VA	Bulb vegetables not listed below	0.13	USDA
VA0380	Fennel, bulb (including Carosella)	0.65	USDA
VA0381	Garlic	2.0	FSANZ
VA0384	Leek	0.040	USDA
VA0385	Onion, bulb	0.13	USDA
VA0388	Shallot	0.14	USDA
VB	Brassica vegetables no listed below	0.10	USDA
VB0041	Cabbages, head	0.13	USDA
VB00421	Broccoli	0.10	USDA
VB00423	Cauliflower	0.27	USDA
VB0402	Brussels sprouts	0.19	USDA
VB0405	Kohlrabi	0.070	USDA
VC	Cucurbits not listed below	0.050	USDA
VC0046	Melons, except Watermelon	0.030	USDA
VC0423	Chayote (Christophine)	0.090	USDA
VC0424	Cucumber	0.050	USDA
VC0429	Pumpkins (including Cushaws, Vegetable spaghetti)	0.10	FSANZ
VC0431	Squash, summer (including Marrow, Zucchetti, Zucchini)	0.14	USDA
VC0432	Watermelon	0.37	USDA
VC0433	Squash, winter	0.10	USDA
VD	Pulses not listed below	2.3	USDA
VD0523	Broad bean (dry) [Fava bean, Horse bean]	3.0	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
VD0524	Chick-pea (dry) [Gram]	15	USDA
VD0526	Common bean (dry) [Dwarf bean, Field bean, Flagelot]	2.3	USDA
VD05261	Haricot bean (dry) [Navy bean (dry)]	1.5	FSANZ
VD05262	Kidney bean (dry)	1.4	FSANZ
VD0527	Cowpea (dry) [Black-eyed pea]	0.88	USDA
VD0531	Hyacinth bean (dry) [Bonavist bean, Lablab (dry)]	0.76	USDA
VD0533	Lentil (dry)	4.9	USDA
VD0534	Lima bean (dry) [Butter bean, Sieva bean]	1.3	FSANZ
VD0536	Mung bean (dry) [Green gram (dry)]	1.6	USDA
VD0537	Pigeon pea (dry) [Angola pea, Cajan pea, Red gram]	0.12	USDA
VD0541	Soya bean (dry) (including Soya bean (dry), used for tofu, Soya bean (dry), used for soy sauce, Soy Flour)	43	USDA
VD0545	Lupin (dry)	18	FSANZ
VD0560	Adzuki bean (dry)	0.50	USDA
VD0561	Field pea (dry) [Wrinkled pea (dry)]	3.9	USDA
VL	Leafy vegetables not listed below	0.050	USDA
VL0269	Grape leaves	0.39	USDA
VL0460	Amaranth (Bledo)	0.76	USDA
VL0464	Chard (silver beet)	0.40	USDA
VL0466	Pak-choi or Paksoi (Celery mustard, Pak-tsoi)	0.15	USDA
VL0467	Chinese cabbage (Pe-tsai, Celery cabbage, Pak-tsai)	0.21	USDA
VL0469	Chicory leaves (Sugar loaf)	0.060	USDA
VL0472	Cress, garden	0.87	USDA
VL0473	Watercress	0.060	USDA
VL0474	Dandelion	0.14	USDA
VL0476	Endive	0.040	USDA
VL0480	Kale (Borecole, Collard)	0.29	USDA
VL0481	Komatsuma (Mustard spinach)	0.22	USDA
VL0482	Lettuce, Head	0.040	USDA
VL0483	Lettuce, Leaf	0.050	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
VL0485	Mustard greens (Mizuna)	0.15	USDA
VL0486	New Zealand spinach (Warrigal greens)	0.030	USDA
VL0496	Rucola (Arugula, Rocket salad, Roquette)	0.46	USDA
VL0502	Spinach	0.050	USDA
VL0505	Taro leaves	0.60	USDA
VL0506	Turnip greens (Broccoli raab, Namenia)	0.090	USDA
VL0508	Sweet potato, leaves	0.20	USDA
VL0510	Cos lettuce	0.090	USDA
VO	Other fruiting vegetables not listed below	0.30	USDA
VO0440	Eggplant (Aubergine, Thai eggplant, Pea eggplant)	0.14	USDA
VO0442	Okra (Lady's finger)	0.16	USDA
VO0444	Peppers, chili (Cluster pepper, Cone pepper)	0.24	USDA
VO0445	Peppers, sweet (Bell pepper, Paprika, Pimento)	0.020	USDA
VO0447	Sweet corn	0.20	FSANZ
VO0448	Tomato	0.30	USDA
VO0449	Yeast only	0.22	USDA
VO0450	Mushrooms	0.10	FSANZ
VP	Legume vegetables not listed below	0.080	USDA
VP0522	Broad bean (green pods and immature seeds)	0.17	USDA
VP0523	Broad bean, shelled (succulent) [Fava bean]	0.17	USDA
VP0526	Common bean (pods and/or immature seeds) (including (Snap bean (immature seeds)))	0.080	USDA
VP05261	Haricot bean (green pods and/or immature seeds)	0.52	USDA
VP05263	Kidney bean (green pods and/or immature seeds)	0.39	USDA
VP0527	Cowpea (immature pods)	0.19	USDA
VP0528	Garden pea (young pods)(=succulent, immature seeds)	0.21	USDA
VP0529	Garden pea, shelled (succulent seeds)[Wrinkled pea]	0.35	USDA
VP0530	Goa bean (immature pods)[Asparagus pea, Winged bean]	2.5	USDA
VP0531	Hyacinth bean (young pods, immature seeds)[Lablab]	0.95	USDA
VP0533	Lentil (young pods)	1.0	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
VP0534	Lima bean (young pods and/or immature beans)	0.50	USDA
VP0536	Mung bean (green pods) [Green gram]	0.22	USDA
VP0537	Pigeon pea (green pods and/or young seeds)	0.13	USDA
VP0538	Podded pea (young pods)[Mangetout, Sugar pea]	0.21	USDA
VP0541	Soya bean (immature seeds)	13	USDA
VP0544	Yard-long bean (pods) [Asparagus bean]	0.21	USDA
VR	Root and tuber vegetables not listed below	0.12	USDA
VR0463	Cassava (Manioc, Tapioca)	0.75	USDA
VR0469	Chicory, roots	0.040	USDA
VR0494	Radish	0.17	USDA
VR0497	Swede (Rutabaga, Swedish turnip)	0.25	USDA
VR0505	Taro (Cocoyam, Dasheen, Eddoe)	0.16	USDA
VR0506	Turnip, garden	0.060	USDA
VR0508	Sweet potato	0.010	USDA
VR0573	Arrowroot	0.040	USDA
VR0574	Beetroot	0.32	USDA
VR0575	Burdock, greater or edible	0.37	USDA
VR0577	Carrot	0.12	USDA
VR0578	Celeriac	0.56	USDA
VR0583	Horseradish	1.3	USDA
VR0585	Jerusalem artichoke	0.040	USDA
VR0588	Parsnip	1.0	USDA
VR0589	Potato	0.010	USDA
VR0600	Yams	0.060	USDA
VR0601	Yam bean (Jicama, Potato yam)	0.050	USDA
VR0603	Chinese water chestnut	5.6	USDA
VR0606	Lotus root	0.14	USDA
VR0607	Wasabi	43	USDA
VS	Stalk and stem vegetables not listed below	0.31	USDA
VS0469	Witloof chicory (sprouts)	0.020	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
VS0620	Artichoke, globe	0.050	USDA
VS0621	Asparagus	0	USDA
VS0622	Bamboo shoots	0.070	USDA
VS0623	Cardoon	0.18	USDA
VS0624	Celery	0.31	USDA
VS0627	Rhubarb	0.37	USDA
WC	Crustaceans of all species not listed below	0.60	FSANZ
WC0146	Crabs	1.0	USDA
WC0978	Lobsters (Langouste)	0.80	FSANZ
WC0979	Shrimps or Prawns	0.60	FSANZ
WD	Diadromous fish (including Paddle fish, Shad, Smelt, Whitebait)	54	FSANZ
WD0121	Salmon species	54	FSANZ
WD0123	Trout species (including Arctic char)	75	FSANZ
WD0890	Eel species	28	USDA
WD0891	Milkfish	26	FSANZ
WD0893	Salmon, Atlantic	54	FSANZ
WD0896	Sturgeon	14	USDA
WD0897	Nile perch	4.3	FSANZ
WD0898	Barramundi (including Giant sea perch)	11	FSANZ
WF	Freshwater fish not listed below	9.0	FSANZ
WF0858	Bream	9.0	FSANZ
WF0859	Carp	12	USDA
WF0861	Catfish (freshwater)	23	USDA
WF0864	Perch	51	FSANZ
WF0865	Pike	0.79	USDA
WF0868	Tilapia	13	FSANZ
WR	Roe (including Fish offal, Shark liver, Cod liver)	11	USDA
WR0140	Fish Roe	11	USDA
WS	Marine fish of all species not listed below	13	USDA
WS0004	Gemfish	6.2	FSANZ

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
WS0005	Billfish (including marlin, broadbill)	22	USDA
WS0006	Orange roughy	1.5	USDA
WS0008	Flathead	1.1	FSANZ
WS0010	Snapper	2.2	FSANZ
WS0130	Sardine and sardine-like fishes	2.4	FSANZ
WS0131	Shark	0.40	FSANZ
WS0920	Anchovies	6.2	USDA
WS0925	Butterfish	13	FSANZ
WS0927	Cod	1.5	FSANZ
WS0928	Conger or Conger eel	28	USDA
WS0931	Drums	3.2	FSANZ
WS0932	Flounders	3.6	USDA
WS0934	Haddock	0.39	USDA
WS0936	Halibut	2.	USDA
WS0937	Herring	29	USDA
WS0938	Jack mackerel (Indian mackerel, Scad)	13	USDA
WS0939	King mackerel (Seerfish, Spanish mackerel)	3.1	USDA
WS0941	Mackerel (including Atlantic, Chub, Indian, Short)	23	USDA
WS0943	Mullet	13	FSANZ
WS0944	Ocean Perch (Scorpion fishes)	1.9	USDA
WS0946	Pollack (Coalfish)	0.56	USDA
WS0949	Sea bass	4.5	USDA
WS0950	Sea bream	9.0	FSANZ
WS0951	Sole	3.6	USDA
WS0952	Tuna (including Tuna, canned)	9.2	USDA
WS09521	Tuna, non-canned, non-bluefin	1.1	FSANZ
WS0954	Whiting	0.60	FSANZ
WS0955	Wolffish (Sea Catfish)	5.2	USDA
WS0958	Kingfish	33	FSANZ
XX0001	Seaweed	0.86	USDA

Classification code	Classification name	Oleic acid concentration (g/kg)*	Source
XX0002	Stevia	0	USDA
XX0003	Agave	0	USDA

* All oleic concentrations shown in this table have been rounded to either 2 significant figures or to the nearest whole number (for concentrations >10 grams per kg)

▽ Mean oleic acid concentration of the two SHO Events

Appendix 2: Dietary Intake Assessments at FSANZ

A dietary intake assessment is the process of estimating how much of a food chemical a population, or population sub group, consumes. Dietary intake of food chemicals is estimated by combining food consumption data with food chemical concentration data. The process of doing this is called 'dietary modelling'.

Dietary intake = food chemical concentration x food consumption

FSANZ's approach to dietary modelling is based on internationally accepted procedures for estimating dietary intake of food chemicals. Different dietary modelling approaches may be used depending on the assessment, the type of food chemical, the data available and the risk assessment questions to be answered. In the majority of assessments, FSANZ uses the food consumption data from each person in the national nutrition surveys to estimate their individual dietary intake. Population summary statistics such as the mean intake or a high percentile intake are derived from the ranked individual person's intakes from the nutrition survey.

An overview of how dietary intake assessments are conducted and their place in the FSANZ Risk Analysis Process is provided on the FSANZ website at:
http://www.foodstandards.gov.au/science/riskanalysis/Pages/default.aspx

FSANZ has developed a custom-built computer program 'Harvest' to calculate dietary intakes. Harvest replaces the program 'DIAMOND' that has been used by FSANZ for many years. Harvest has been designed to replicate the calculations that occurred within DIAMOND using a different software package.

Further detailed information on conducting dietary intake assessments at FSANZ is provided in *Principles and Practices of Dietary Exposure Assessment for Food Regulatory Purposes* (FSANZ 2009), available at:
http://www.foodstandards.gov.au/science/exposure/documents/Principles%20_%20practices%20exposure%20assessment%202009.pdf

Food consumption data used

The most recent food consumption data available were used to estimate intakes of oleic acid for the Australian and New Zealand populations. The national nutrition survey (NNS) data used for these assessments were:

- The 2011-12 Australian National Nutrition and Physical Activity Survey (2011-12 NNPAS)
- The 2002 New Zealand National Children's Nutrition Survey (2002 NZ CNS)
- The 2008-09 New Zealand Adult Nutrition Survey (2008 NZ ANS).

The design of each of these surveys varies somewhat and key attributes of each are set out below. Further information on the National Nutrition Surveys used to conduct dietary intake assessments is available on the FSANZ website at:
http://www.foodstandards.gov.au/science/exposure/Pages/dietaryexposureandin4438.aspx

2011–12 Australian National Nutrition and Physical Activity Survey (2011-12 NNPAS)

The 2011–12 Australian National Nutrition and Physical Activity Survey (NNPAS) undertaken by the Australian Bureau of Statistics is the most recent food consumption data for Australia.

This survey includes dietary patterns of a sample of 12,153 Australians aged 2 years and above. The survey used a 24-hour recall method for all respondents, with 64% of respondents also completing a second 24-hour recall on a second, non-consecutive day. The collection dates of the data were May 2011 to June 2012 (with no enumeration between August and September 2011 due to the Census). Only those respondents who had two days of food consumption data were used to estimate oleic acid intakes. Consumption and respondent data from the *Confidentialised Unit Record File*s (CURF) data set (ABS, 2015) form part of the Harvest core data set. These data were used weighted in Harvest.

2002 New Zealand National Children's Nutrition Survey (2002 NZ CNS)

The 2002 NZ CNS was a cross-sectional and nationally representative survey of 3,275 New Zealand children aged 5-14 years. The collection period for the data was during the school year from February to December 2002. The survey used a 24-hour food recall and provided information on food and nutrient intakes, eating patterns, frequently eaten foods, physical activity patterns, dental health, anthropometric measures and nutrition-related clinical measures. It was also the first children's nutrition survey in New Zealand to include a second day diet recall data for about 15% of the respondents, and dietary intake from both foods (including beverages) and dietary supplements. Only the Day 1 24-hour recall data for all respondents (excluding supplements) were used for this assessment. These data are used weighted in Harvest.

2008-09 New Zealand Adult Nutrition Survey (2008 NZ ANS)

The 2008 NZ ANS provides comprehensive information on the dietary patterns of a sample of 4,721 respondents aged 15 years and above. Collection of Data for the survey occurred on a stratified sample over a 12-month period between October 2008-October 2009. The survey used a 24-hour recall methodology with 25% of respondents also completing a second 24-hour recall. The information collected in the 2008 NZ ANS included food and nutrient intakes, dietary supplement use, socio-demographics, nutrition related health, and anthropometric measures. Only the Day 1 24-hour recall data for all respondents (excluding supplements) were used for this assessment. These data are used weighted in Harvest.

Limitations of dietary intake assessments

Dietary intake assessments based on food consumption data from national dietary surveys provide the best estimation of actual consumption of a food and the resulting estimated dietary intake assessment for the Australian population aged 2 years and above, as well as the New Zealand populations aged 5-14 years and 15 years and above. However, it should be noted that national nutrition survey data do have limitations. Further details of the limitations relating to dietary intake assessments undertaken by FSANZ are set out in the FSANZ document, *Principles and Practices of Dietary Exposure Assessment for Food Regulatory Purposes* (FSANZ, 2009).