

Factsheet Consumption of Carbohydrates in the Netherlands



Results of the sixth Dutch National Food Consumption Survey 2019-2021.

Consumption of Carbohydrates in the Netherlands

How many carbohydrates do Dutch people on average consume? And have Dutch people been eating more or less of them over the years? To answer these (and more) questions, data from the latest Dutch Food Consumption Survey 2019-2021 by the National Institute for Public Health and the Environment (RIVM) has been used to map out the current intake of carbohydrates. The current data was compared to those from previous surveys. The results of this research are collected in this factsheet from the Cosun Nutrition Center.



Key findings of the sixth Dutch National Food Consumption Survey (DNFCS) 2019-2021 regarding carbohydrates¹:

The average carbohydrate intake is 213 grams per day, which corresponds to 43% of the average energy intake of 2010 kilocalories.

The top 7 food items contributing the most to carbohydrate intake are:

1. Bread, cereals, rice, and pasta (36.6%)
2. Dairy products and substitutes (10.3%)
3. Fruits, nuts and seeds, and olives (10.1%)
4. Cakes and sweet biscuits (8.7%)
5. Sugar and confectionery (7.4%)
6. Non-alcoholic beverages (7.2%)
7. Potatoes and other tubers (6.8%)

The average intake of digestible carbohydrates meets the recommendation of the Health Council of the Netherlands, which suggests that at least 40% of energy should come from carbohydrates, without setting an upper limit².

A few definitions

Carbohydrates is the collective term for all sugars, starches, and dietary fibres in our diet. Carbohydrates can be classified into digestible carbohydrates and indigestible carbohydrates. Digestible carbohydrates are absorbed by the body and used as a source of energy. All digestible carbohydrates provide 4 kilocalories per gram. Indigestible carbohydrates are dietary fibres. The body cannot absorb these, but they are important for a healthy digestion.

Carbohydrates consist of one or more building blocks, the saccharides. A saccharide has a ring structure and is composed of carbon (C), hydrogen (H), and oxygen (O). Carbohydrates can be divided into three main groups: mono- and disaccharides, oligosaccharides, and polysaccharides.

Mono- and disaccharides are carbohydrates composed of one (mono-) or two (di-) saccharides. Mono- and disaccharides (such as glucose, fructose, sucrose, lactose, maltose) are the sugars.

Oligosaccharides are carbohydrates composed of at least three and up to nine monosaccharides.

Polysaccharides are polymers of many tens to thousands of monosaccharides. Starch is the most well-known polysaccharide in the diet: 80 to 90% of polysaccharides are consumed in the form of starch. Starch is composed of branched or unbranched chains of glucose, known as amylopectin and amylose, respectively. Starch consists mostly of amylopectin and to a lesser extent of amylose.

Dietary fibres are indigestible carbohydrates, and are classified into fermentable, partially fermentable, and non-fermentable fibres. Fermentable fibres are (partially) broken down in the colon by bacteria into, among other substances, short-chain fatty acids which provide energy to the body. Non-fermentable fibres pass through the intestine unchanged

On behalf of the Ministry of Health, Welfare and Sport, the National Institute for Public Health and the Environment (RIVM) collects data on food consumption and nutritional status of the Dutch population in the DNFCS. Food consumption data were collected through two 24-hour dietary recalls, administered on non-consecutive, independent days by trained dietitians, among 3570 individuals aged 1-79 years old.

and do not provide energy. On average, dietary fibres provide 2 kilocalories per gram. Dietary fibres are mainly found in whole grain products, vegetables, fruits, and legumes, and are important for a healthy digestion.

Dutch National Food Consumption Survey

Since 1987, Dutch National Food Consumption Surveys (DNFCS) have been periodically conducted. Until now, six DNFCSs have been completed: DNFCS 1987-1988, DNFCS 1992, DNFCS 1997-1998, DNFCS 2007-2010, DNFCS 2012-2016, and DNFCS 2019-2021. Data on total carbohydrate intake from the most recent DNFCS (2019-2021) were used for this factsheet. To examine the trend in total carbohydrate intake over the years, data from the first five DNFCSs were also included. Due to methodological differences between the DNFCSs before and after 2003, comparing data has limitations. Additionally, not all DNFCSs cover the same age range.

What is the intake of carbohydrates in the Netherlands?

The average intake of carbohydrates is 213 grams per day. This corresponds to 43% of the average energy intake of 2010 kilocalories by the Dutch population.

Table 1 shows the mean intake of total carbohydrates (starch + sugars), polysaccharides (mainly starch), mono- and disaccharides (sugars) and dietary fibre, divided by age and sex. In children, carbohydrate intake increases with age. In adults, carbohydrate intake, both absolute (g) and relative intake (en%), decreases with age.

Intake of energy providing nutrients

Carbohydrates provide the majority of energy, approximately 43%. Fat provides approximately 37%, while protein provides approximately 16%. Fibers and alcohol together account for the remaining 4% of energy. Children derive a higher percentage of their energy from carbohydrates and a lower percentage from fat compared to adults. **Figure 1** illustrates the distribution of energy providing nutrients for the average Dutch individual.

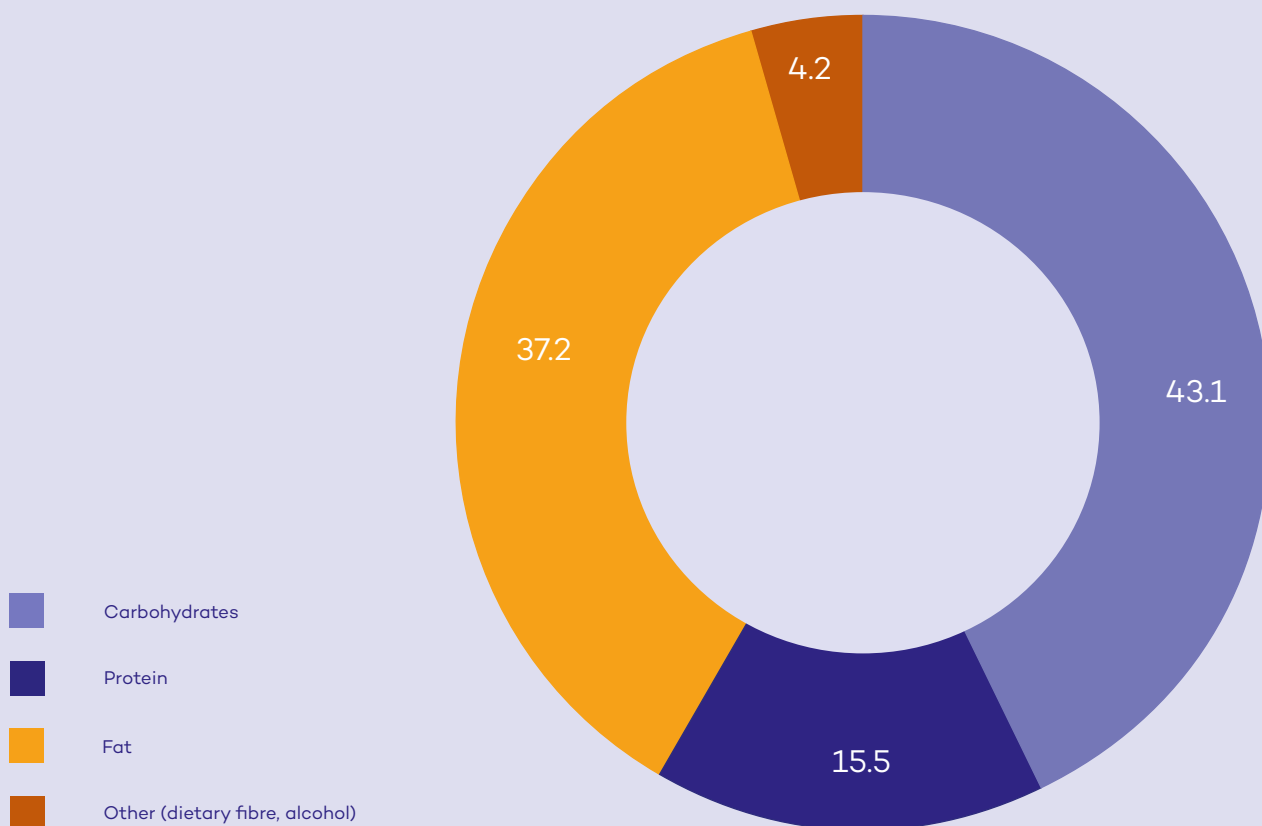
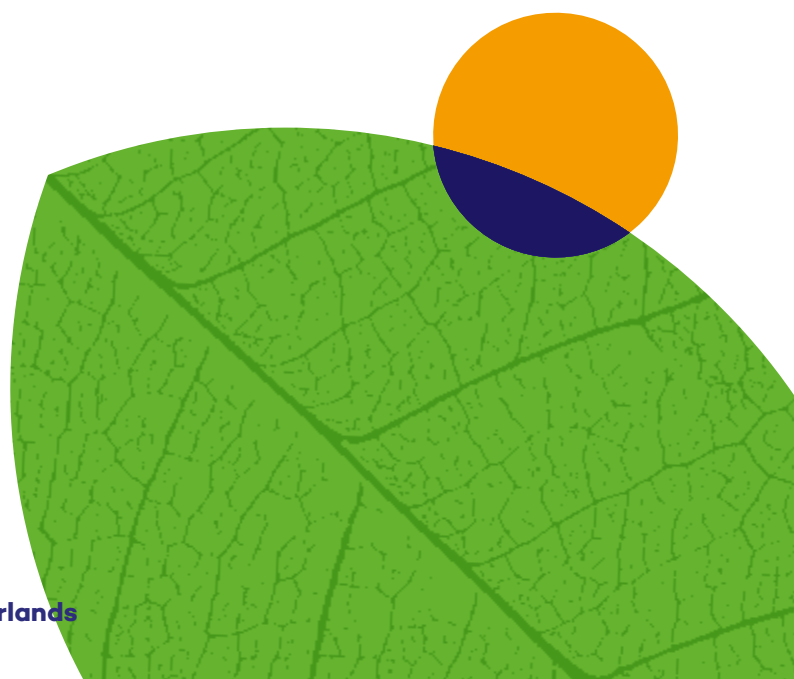


Figure 1. Distribution intake of energy providing nutrients of the average Dutch person, 1-79 years (en%), based on DNFCs 2019-2021¹.

Age	Men	Women
Total carbohydrates (g/d (en%))		
1-3 years	170 (51.1)	159 (51.5)
4-11 years	230 (49.4)	199 (49.4)
12 - 17 years	251 (47.2)	206 (47.2)
18 - 50 years	250 (42.5)	195 (43.2)
51 - 64 years	234 (40.2)	182 (40.6)
65 - 79 years	221 (40.1)	174 (39.7)
Polysaccharides (g/d (en%))		
1-3 years	81 (24.5)	77 (24.6)
4-11 years	121 (26.2)	105,5 (26.3)
12 - 17 years	142 (26.3)	115 (26.2)
18 - 50 years	149 (24.9)	109 (24.2)
51 - 64 years	135 (23.4)	98 (22.1)
65 - 79 years	122 (22.5)	91 (20.9)
Mono- and disaccharides (sugars) (g/d (en%))		
1-3 years	90 (26.7)	90 (26.9)
4-11 years	107 (23.5)	90 (23.7)
12 - 17 years	110 (20.6)	88 (21.0)
18 - 50 years	104 (17.2)	84 (18.2)
51 - 64 years	99 (16.8)	82 (18.0)
65 - 79 years	96 (17.6)	84 (19.2)
Dietary fibres (g/d)		
1-3 years	15.2	14.2
4-11 years	18.6	16.9
12 - 17 years	21.0	18.0
18 - 50 years	23.7	18.7
51 - 64 years	23.6	19.1
65 - 79 years	22.7	19.2

Table 1. Mean intake of total carbohydrates, polysaccharides, mono- and disaccharides in grams per day (g/d) and energy percentage (en%), and mean dietary fibre intake (g/d), based on DNFCs 2019-2021¹.



Which foods are the main source of carbohydrates?

The foods consumed were classified into 18 main groups in the latest DNFCS. The top 10 foods that contribute most to the intake of total carbohydrates are: bread, cereals, rice and pasta (37%), dairy products and substitutes (10.3%), fruits, nuts and seeds, and olives (10.1%), cakes and sweet biscuits (8.7%), sugar and confectionery (7.4%), non-alcoholic beverages (7.2%), potatoes and other tubers (6.8%), savoury snacks (3.7%), vegetables (2.9%) and sauces and seasonings (2%). On average, the top 10 provides 96% of total carbohydrate intake.

Table 2. Top 10 foods that contribute most to total carbohydrate intake as shown in the DNFCS 2019-2021¹.

Food group	Contribution (%)
Boys 1-17 years old	
1. Bread, cereals, rice and pasta	36
2. Dairy products and substitutes	13
3. Fruits, nuts and seeds, and olives	10
4. Non-alcoholic beverages	10
5. Sugar and confectionery	9
6. Cakes and sweet biscuits	8
7. Potatoes and other tubers	6
8. Savoury snacks	4
9. Vegetables	2
10. Sauces and seasonings	1
Girls 1-17 years old	
1. Bread, cereals, rice and pasta	35
2. Dairy products and substitutes	13
3. Fruits, nuts and seeds, and olives	11
4. Non-alcoholic beverages	10
5. Sugar and confectionery	9
6. Cakes and sweet biscuits	8
7. Potatoes and other tubers	6
8. Savoury snacks	4
9. Vegetables	2
10. Sauces and seasonings	1

Table 2 shows the main groups contributing to total carbohydrate intake, divided by age and gender. It shows that bread, cereals, rice and pasta are the largest contributors of carbohydrates for each group. In addition, dairy products and substitutes, and fruits, nuts and seeds, and olives, are major contributors to carbohydrate intake for each group. The contribution of non-alcoholic beverages to carbohydrate intake decreased for each age group compared to the previous DNFCS (2012-2016). Non-alcoholic beverages were still in the top 3 for children and men in the previous DNFCS.

Food group	Contribution (%)
Men 18-79 years old	
1. Bread, cereals, rice and pasta	37
2. Dairy products and substitutes	10
3. Fruits, nuts and seeds, and olives	9
4. Non-alcoholic beverages	8
5. Sugar and confectionery	8
6. Cakes and sweet biscuits	8
7. Potatoes and other tubers	7
8. Savoury snacks	4
9. Vegetables	3
10. Sauces and seasonings	3
Women 18-79 years old	
1. Bread, cereals, rice and pasta	37
2. Dairy products and substitutes	11
3. Fruits, nuts and seeds, and olives	10
4. Non-alcoholic beverages	10
5. Sugar and confectionery	7
6. Cakes and sweet biscuits	7
7. Potatoes and other tubers	6
8. Savoury snacks	4
9. Vegetables	4
10. Sauces and seasonings	2

Intake of foods rich in carbohydrates

Bread, cereals, rice and pasta are products rich in carbohydrates. In the Netherlands, we eat these products frequently. On average, we eat 191 grams of bread, cereals, rice and pasta per day. Men eat more of these products (218 g/d on average) compared to women (165 g/d on average)¹.

Potatoes are also rich in carbohydrates. Potatoes are a staple food in the Netherlands, with the average person enjoying them three times a week. Within the group 'potatoes', the RIVM includes potatoes, potato products and starchy tuberous vegetables (such as sweet potato). The Dutch eat an average of 64 g of potatoes per day. Men have a higher mean intake of potatoes (75 g/d) compared to women (53 g/d)¹.

Did the intake of carbohydrate increase over the years?

The average carbohydrate intake has remained relatively stable in recent years, both in absolute terms and relative to total energy intake. However, in the new Dutch National Food Consumption Survey (NFCS) of 2019-2021, a slight decrease in both absolute and relative carbohydrate intake is observed. Detailed data can be found in **Table 3** and **Figure 2**. It should be noted that direct comparisons between all DNFCSSs may not be straightforward due to variations in measurement methods over the years and differences in the age ranges of the samples.



Table 3. Average intake of total carbohydrates and mono- and disaccharides in grams per day (g/d) and energy percentage (en%) as observed in the six DNFCs^{1,3}.

DNFCS performed in	Age range	Number of persons in the sample	Carbohydrates (g/d)	Carbohydrates (en%)	Mono- and disaccharides (g/d)	Mono- and disaccharides (en%)
1987-1988	1-85	5898	254	44.5	128	22.5
1992	1-92	6218	250	45.7	122	22.5
1997-1998	1-97	5958	251	46.4	125	23.3
2007-2010	7-69	3819	249	45.0	120	21.3
2012-2016	1-79	4313	237	45.0	112	20.4
2019-2021	1-79	3570	213	43.1	93	18.8

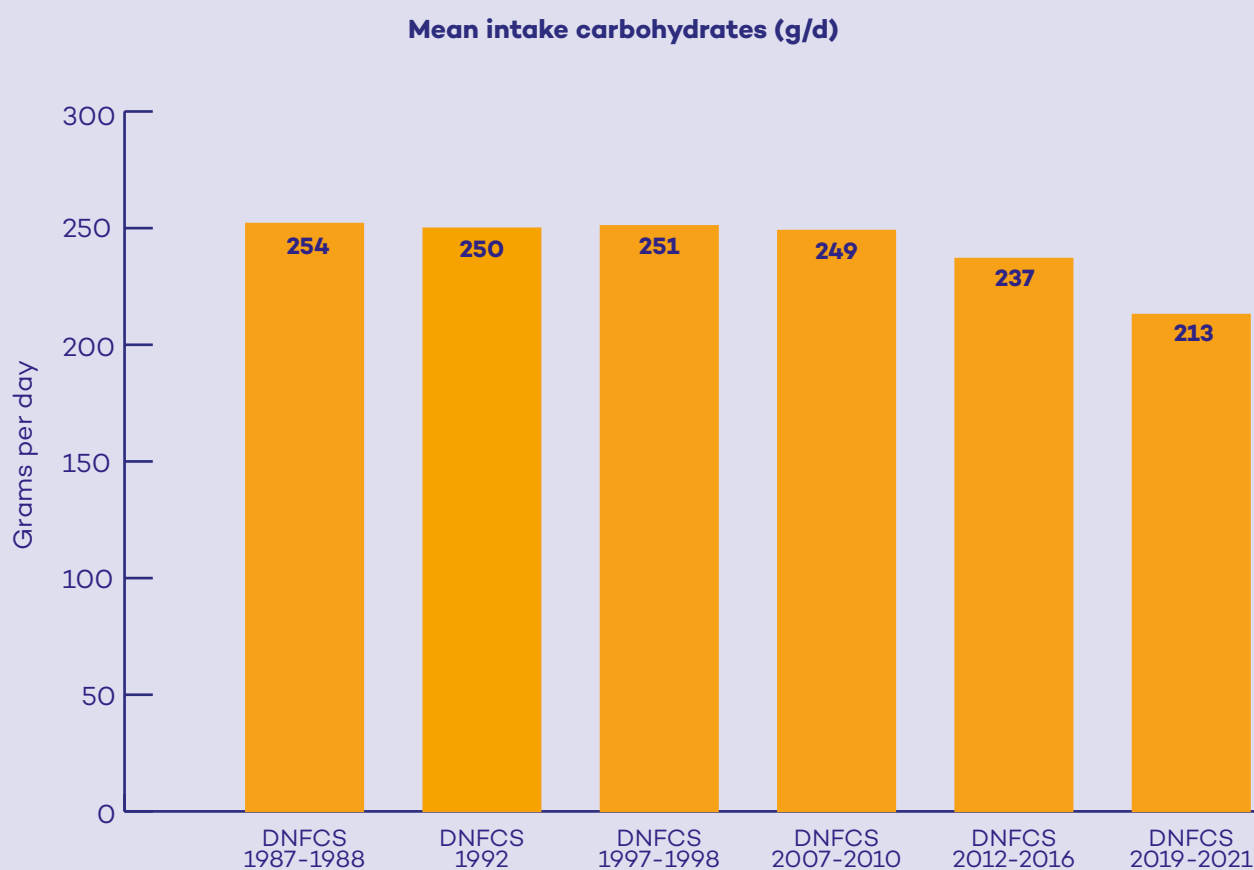


Figure 2. A visual representation of Table 3. Trend in intake of total carbohydrates over the years.

What about sugars?

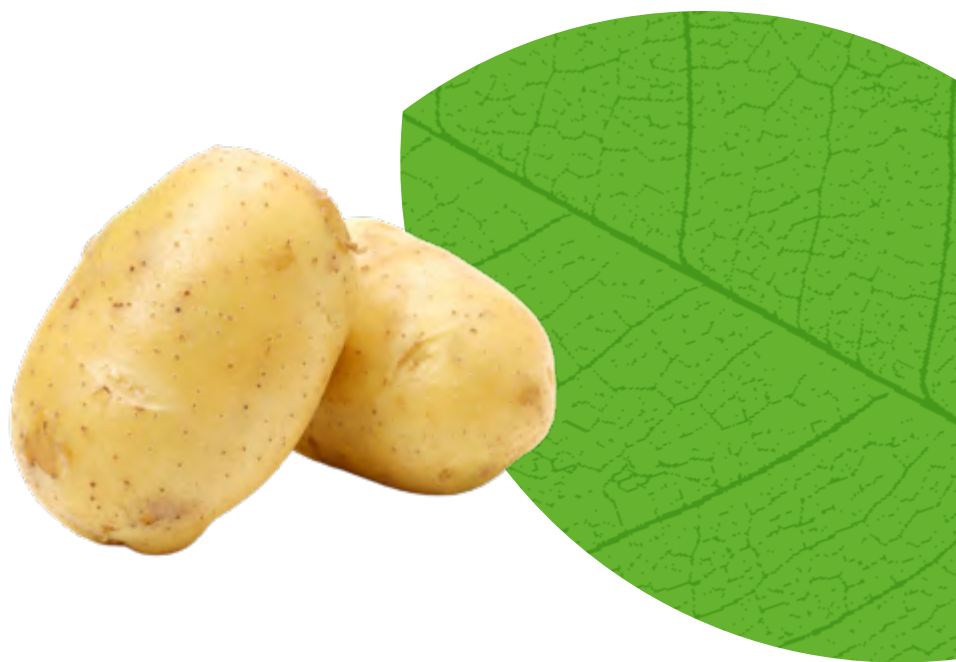
Regarding sugars (mono- and disaccharides), the average intake remained relatively stable during the period 1987–1998. However, between 2007 and 2021, there was a significant decrease in the intake of mono- and disaccharides (see **Table 3**). This decrease applies to both absolute intake and its contribution to energy intake, for both children and adults. Absolute intake has decreased by 36 grams per day, which represents a 14.5% decline. The relative intake has decreased by 4.2%.

For more information on sugar consumption and the changes in recent years, please see our factsheet [Consumption of sugars in the Netherlands](#).

Sources of dietary fibres

Dietary fibres are mainly found in whole grain products, vegetables, fruits, and legumes, and are important for a healthy digestion. Fibers can also be added to products that naturally don't contain much fibre, such as dairy products. In the Netherlands, the average fibre intake is 21 grams per day. Adults consume more fibre (21 g/day) than children (18 g/day). The fibre intake per megajoule (MJ) is the same for both adults and children (both 2.5 g/MJ/day). These dietary fibres comprise the total fibre content, which includes components from plant cell walls that cannot be broken down by digestive enzymes in the gastrointestinal tract.

The top 5 foods that contribute the most to fibre intake can be found in **Table 4**. On average, the top 5 foods provide over 80% of the total dietary fibres.



Food group	Contribution (%)
Total Dutch population (1-79 years old)	
1. Bread, cereals, rice, and pasta	41
2. Fruits, nuts and seeds, and olives	16
3. Vegetables	15
4. Potatoes and other tubers	7
5. Cakes and sweet biscuits	4

Table 4. Top 5 foods that contribute most to dietary fibre intake as shown in the VCP 2019–2021¹.

Dietary guidelines

As mentioned, on average in the Netherlands, we derive 43% of our energy from digestible carbohydrates. The intake of digestible carbohydrates meets the recommendation of the Health Council of the Netherlands, which advocates for at least 40% of energy to be derived from carbohydrates, without setting an upper limit. This recommendation does not differentiate between the types of digestible carbohydrates (mono-, di-, or polysaccharides). Intake data reveal that both the group with the highest carbohydrate intake (51.1 en% for boys and 51.5 en% for girls aged 1-3 years) and the group with the

lowest intake (39.7 en% for women aged 65-79), in terms of energy percentage, are above or approaching the lower limit of the recommendation of the Health Council of the Netherlands.

The Health Council of the Netherlands recommends that adults consume 3.4 grams of dietary fibre per megajoule. With an average energy intake, this amounts to 25-30 grams per day. According to the average intake data from the latest DNFCs, Dutch adults do not meet this recommendation (20.5 g/day).



Cosun Nutrition Center is grateful to its Scientific Advisory Board, consisting of experts in nutrition, health and sustainability, food safety and nutrition communication, for their critical contributions to this factsheet.

Cosun Nutrition Center, April 2024

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