USDA, FDA, and ODS-NIH Database for the Iodine Content of Common Foods
Release 4.0

Prepared by:

Katherine Heydorn[1A], Edwina Wambogo[2], Judith H. Spungen[3], Abby G. Ershow[2A*], Jaime J. Gahche[2], Carol Haggans[2A], Joyce Merkel[2A], Kristine Y. Patterson[1A*], Pamela R. Pehrsson[1]

[1] Methods and Application of Food Composition Laboratory
Agricultural Research Service
U.S. Department of Agriculture (USDA)

[2] Office of Dietary Supplements
National Institutes of Health (NIH)

[3] Center for Food Safety and Applied Nutrition
U.S. Food and Drug Administration (FDA)

* Retired
[A] Contractors

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U.S. Department of Agriculture
Agricultural Research Service
Beltsville Human Nutrition Research Center
Methods and Application of Food Composition Laboratory (MAFCL)
10300 Baltimore Avenue
Building 005, Room 107, BARC – West
Beltsville, Maryland 20705 Tel. 301-504-0630
MAFCL web site: https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/methods-and-application-of-food-composition-laboratory/
FoodData Central database web site: https://fdc.nal.usda.gov/

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Disclaimer:

Introduction

Iodine is an essential mineral for human health, functioning as a component of thyroid hormones with important roles in growth and maturation, neurologic development, reproduction, and energy metabolism (Lee et al., 2016a; Rohner et al., 2014). Severe iodine deficiency during pregnancy and early childhood has serious effects on the developing fetus and infant and can cause permanent damage (Swanson et al., 2012). Goiter, enlargement of the thyroid gland, and other disturbances of thyroid function can be seen at all ages in individuals whose diets lack iodine at needed levels.

Adequate dietary iodine intake is crucial, with 150 µg/day as the daily recommended dietary allowance (RDA) for ages 14 years and older, 220 µg/day for pregnant women, and 290 µg/day for lactating women (Institute of Medicine, 2001; Rohner et al., 2014). On the other end of the spectrum, the tolerable upper intake level for iodine is 1100 µg/day for adults (Institute of Medicine, 2001). Excessive intake also can result in adverse health effects such as thyroid dysfunction (e.g., goiter, hyperthyroidism), autoimmune thyroid disease, and cancer (Luo et al., 2014; Ershow et al., 2016).

Iodine intake in the U.S. population overall is generally considered sufficient, but subgroups identified as at-risk for iodine insufficiency include women of reproductive age, young adults, and non-Hispanic blacks, with a trend of increasing deficiency over a 12-year period of the National Health and Nutrition Examination Survey (NHANES) from 2001-2012 (Lee et al., 2016a). Iodine insufficiency in the U.S. is a public health concern especially in pregnant women (Pearce, 2015). NHANES 2007-2010 results suggested that 55% of pregnant women and 37% of non-pregnant women of childbearing age had inadequate iodine intakes as measured by urinary iodine (Caldwell et al., 2013).

In 2023, the USDA-ARS MAFCL Food and Nutrient Research (FNR) group evaluated several chemicals possessing the ability to inhibit iodine uptake in the thyroid gland, including perchlorate and thiocyanate. Scientific background regarding these two iodine inhibitors is available in Appendices A and B.

To assess iodine status, iodine intake must be estimated, which necessitates the availability of data on iodine content and variability for individual foods (Swanson et al., 2012). Workshops that were convened by the Office of Dietary Supplements, National Institutes of Health (NIH) with other scientists in 2011 and 2014 confirmed the need for food composition tables on iodine content (Swanson et al., 2012; Ershow et al., 2018). Thus, the impetus for this project has been the need for updated and expanded data on the iodine content of foods to address continued public health concerns. The database presented here has been developed, through collaboration between the U.S. Department of Agriculture (USDA) Methods and Application of Food Composition Laboratory (MAFCL) in Beltsville, MD, the U.S. Food and Drug Administration (FDA) Center for Food Safety and Applied Nutrition in College Park, MD and the Office of Dietary Supplements, National Institutes of Health, Bethesda, MD. This release includes 478 foods.

Background

The FDA collects about 100 kinds of food and beverage samples regionally and about an additional 190 foods nationally as part of its Total Diet Study (TDS) and analyzes these samples for nutrient elements, including iodine. These data are available on-line (FDA, 2023). The TDS program began in 1961, and analysis of TDS samples for iodine began in 1973. The TDS currently monitors levels of over 400 contaminants and nutrients in the average U.S. diet; the number varies slightly from year to year. Juan et al. (2016) used the TDS data and data on iodine concentrations in supplements, water, and salt, along with

What We Eat In America (WWEIA), the dietary intake interview portion of NHANES, to estimate intakes of iodine from foods, water, and supplements for the U.S. population. Abt et al. (2018) used updated TDS iodine concentration data to estimate intakes of iodine from food sources.

More recently, the USDA has also been analyzing iodine in foods and dietary supplements obtained via nationwide sampling (Pehrsson et al., 2016; Ershow et al., 2016; USDA, 2017). These have included important dietary food sources of iodine e.g., seaweed, fish and other seafood, dairy foods, iodized salt, eggs, (Rohner et al., 2014; Lee et al., 2016b; Pehrsson et al., 2016) as well as multivitamin-multimineral dietary supplements for adults, children, and pregnant women (USDA, 2017).

A wide range of iodine concentrations in individual foods and variable use of iodized salt at the table and in food preparation make intake assessment especially challenging (Swanson et al., 2012). Varying levels in foods are due to factors such as the amount of iodine in soil where crops are grown, extent of iodine supplementation to animals, use of iodophors as sanitizing agents, and iodine-containing ingredients in processed foods (Ershow et al., 2018). Iodine is present naturally at relatively high levels in seaweed, many saltwater fishes, and other seafood due to the ability to concentrate iodine from their seawater environment (Rohner et al., 2014).

Analytical methodology and quality control

Samples were purchased and analyzed by scientists from two sources (the FDA and the USDA) providing data for the database. FDA's Kansas City Laboratory (Lenexa, KS), FDA's Center for Food Safety and Applied Nutrition laboratory (College Park, MD), and the USDA contract laboratory analyzed the foods for iodine using inductively coupled plasma mass spectrometry (ICP-MS). The USDA samples were solubilized using a strong base; a stabilizer was added followed by dilution and filtration prior to iodine analysis (Sullivan and Zywicki, 2012). The limit of quantitation (LOQ) for the analyses was 10 mcg/100g of iodine for most of the foods and 50 mcg/100g for the salt samples. FDA solubilized TDS samples using tetramethyl-ammonium hydroxide and a hot block extraction system at 85˚C was used to extract the available iodine (Todorov and Gray 2017). In 2016 and 2017, FDA's limit of detection (LOD) for iodine in TDS samples ranged from 0.01 – 0.04 mcg/100g; the LOQ ranged from 0.1 – 0.5 mcg/100g. In 2018-2020, FDA set Reporting Limits (RLs) for TDS iodine analyses, to account for variability in LODs and LOQs between analyses performed at different times. The TDS iodine RLs ranged from 0.3 – 2.5 mcg/100 g. In 2023-2024, the FDA's Center for Food Safety and Applied Nutrition laboratory LOD for iodine in USDA samples ranged 0.01 – 0.08 mcg/100g and the LOQ ranged from 0.1 – 0.6 mcg/100g.

Quality control materials used for analysis of the USDA samples included certified standard reference materials (SRMs) from the National Institute of Standards and Technology (NIST, Gaithersburg, MD 20899): SRM 1548a (a material representing a typical diet), SRM 1549 (non-fat milk powder), SRM 1849 (nutritional formula), and SRM 3530 (iodized table salt). Secondary reference materials from Virginia Tech (Phillips et al., 2006) that have been cross-validated against the SRMs were also used. FDA used SRM 1549a (whole milk powder) as a reference material for quality control of their iodine analyses. All data from the analysis of samples and their reference materials were reviewed by internal quality control review committees at USDA and FDA before acceptance. Data were accepted only by consensus among the committees after thorough consideration. As a crucial aspect of the data review process, a conservative approach was used, e.g., every value that seemed questionable was investigated and was rejected or retested at the lab, if possible.

Source and handling of samples: USDA

Many of the samples analyzed by USDA came from the National Food and Nutrient Analysis Program (NFNAP) (Haytowitz and Pehrsson, 2018). The foods collected under this study and other related studies were processed by Virginia Tech, Blacksburg, VA. Foods that required preparation were made using directions on the packages. For most of the foods, other than milk, eggs, salt, almond beverage, and soy beverage, described below, samples from more than one location were combined.

Where appropriate, the samples were processed with liquid nitrogen, frozen and sent out for analysis with additional aliquots of the food samples stored long-term at -60°C. It was determined that iodine in the samples remains stable under such conditions, by having five samples with different matrices sent for iodine analysis and five years later analyzing aliquots of the same samples. The results did not show any loss of iodine over time and were within the limits of analytical uncertainty.

While the NFNAP program has been running for over 20 years, many of the food samples are more recent. For example, whole raw fresh eggs were collected and analyzed in 2019, and two other types of eggs, dried and frozen, primarily for commercial use, were collected in 2017. Non-flavored fluid milks as well as salt samples (including iodized table salt, iodized sea salt, and non-iodized sea salt) were also collected and analyzed in 2018-2019.

In addition to examining the uptake of sodium by pasta boiled in salted water, Virginia Tech scientists had the pasta analyzed for iodine uptake since iodized salt was used during cooking (Bianchi et al., 2019). Included in the data are replicate samples using the recommended amount of salt in the cooking water based on the label instructions.

Some samples of white bread, whole wheat bread, and hamburger/hot dog rolls that were obtained in 2019 had labels listing potassium iodate or calcium iodate as a dough conditioner. These baked products were analyzed for iodine to provide information on the amount derived from the dough conditioner.

In an earlier study to determine the fluoride content of tap water in the U.S. (Pehrsson et al., 2006), USDA collected tap water samples from 144 locations around the country. A random subset of 40 of these archived water samples was analyzed for iodine by the FDA laboratory.

More recently, USDA samples were acquired in conjunction with the FoodData Central (FDC) Foundation Foods (FF) program, a new food composition datatype designed to provide expanded metadata on a diverse number of raw foods and ingredients (USDA ARS, 2024). Although sample processing is identical to the NFNAP program described above, foods are primarily convenience-sampled with the goal of collecting a diverse and representative number of samples from manufacturers and distributors. Release 4.0 includes new analytical data for a total of 14 raw seafood and dairy samples that were collected and analyzed by FDA's Center for Food Safety and Applied Nutrition laboratory in 2023-2024 under this program.

Source and handling of samples: FDA

TDS data included in this iodine content database were limited to results for samples collected beginning in 2016 because of a change in analytical methodology at that time. Prior to 2016, TDS samples were analyzed for iodine concentrations using ultraviolet-visible (UV-VIS) spectrophotometry through the catalysis of the Cesium +4/Arsenic +3 reaction (adapted from Fischer et al., 1986). The ICP-MS method in use for iodine analysis since 2016 has limits of detection (LODs) and LOQs that are lower (i.e., better) than the older method, and there is less interference from other signals; these factors affect estimates of element concentrations and exposures.

After receipt of samples, FDA prepares foods as for consumption; for example, apples are washed, bananas are peeled, and oatmeal is cooked. Deionized water is used in washing, cooking, and beverage preparation. Non-iodized salt was used in cooking food mixtures (e.g., cornbread, scrambled eggs, tuna casserole), but no salt was used in cooking single items (e.g., cooked cereals, vegetables).

Prior to the 2018 fiscal year (October 2017 – September 2018), TDS foods were obtained in four regional market basket (MB) collections per year. For each regional collection, products purchased in each of the three cities within the region were composited to form single analytical samples. All TDS foods were collected in each MB.

The TDS food list and sampling plan were modified at the beginning of the 2018 fiscal year as part of FDA's modernization of the program. Some TDS foods were dropped, and others were added. TDS foods were categorized as "regional" foods (possibly varying in nutrient or contaminant concentrations by region or season) or "national" foods (less likely to vary in nutrient and contaminant concentrations by region or season). Under the sampling plan that began in 2018, regional TDS foods are collected in each of six U.S. regions, in each of two time periods (November – April and May – October); results are presented as collection #1 (October) through collection #12 (September). For each regional collection, products purchased in each of the three cities within a collection region are composited to form single analytical samples. National foods are collected once per year, in Lenexa, KS; the results are presented as collection #13.

In anticipation of the upcoming major change to the TDS sampling plan, FDA conducted a pilot study of the new sampling procedures in the last market basket of 2017 (July). Available data include results for 86 regional foods.

Soy beverages and almond beverages sampled by USDA were analyzed by FDA as described above. Convenience samples of 5 different brands of shelf stable soy beverage and 6 different brands of shelf stable almond beverage were obtained at large grocery stores in Columbia, MD, and College Park, MD, in August 2021. Likewise, 7 dairy samples (yogurt and cheeses) and a total of 7 different types of raw seafood were obtained via convenience sampling at large grocery stores throughout Maryland and Virginia under FDC's FF program described above. Dairy samples were purchased in January 2023, and the raw seafood samples were purchased in September and October 2023. These samples were analyzed along with reference materials at FDA's Center for Food Safety and Applied Nutrition laboratory in College Park, MD. These results, some of which were combined with data from FDA's TDS, were used to obtain mean, standard deviation (SD), and range for each of the two beverage types. See the Data Discussion section below concerning these listings in the datasets.

Database formats, procedures, and notes

The tables provide a description for each food. The Nutrient Data Bank (NDB) numbers familiar to those using USDA's National Nutrient Database for Standard Reference (SR) file and the TDS food numbers from FDA are each shown for reference purposes. Database identification numbers are also provided in column "DB_ID." These numbers are internal USDA identifiers that do not represent the total number of foods. Descriptions of foods provided in the table may not exactly match SR or TDS descriptions. Foods listed without an SR or TDS number are foods that have not previously been reported in USDA or TDS composition data tables.

SR did not include data on the iodine content of foods. However, as previously noted, USDA arranged for stored NFNAP samples to be analyzed for iodine, focusing primarily on foods likely to have appreciable amounts of iodine. The results of those analyses are included in FoodData Central. FDA posts TDS data on iodine concentrations on its TDS website along with concentrations of other nutrient elements and contaminants (FDA, 2023).

When both FDA and USDA data were available for the same food types, the data were combined, as indicated in Data Source(s) column in the tables. Where only USDA or FDA is indicated, the data are solely from that source. The year in which the samples were chemically analyzed is shown, which is typically within a year of when the respective food samples were procured.

Footnotes are given where further descriptions or explanations of specific food descriptions are needed. For example, a footnote was applied to all foods analyzed by FDA's Center for Food Safety and Applied Nutrition laboratory to indicate these analyses were conducted separately from the TDS. The datasets also provide means, standard deviations, value ranges, and sample sizes (n). Data are depicted in two different formats: 1) per 100 grams of food and 2) per serving. Per 100g of food is the unit used both in USDA's previous SR file (Haytowitz and Pehrsson, 2018) and in the current FoodData Central (USDA ARS, 2024). For amounts per serving, the reference which was used for determining each serving size is shown in the "Serving Size Reference" column. Serving sizes were determined primarily by using the FDA's Reference Amounts Customarily Consumed (RACC) (FDA, 2024a). For items not specified in RACC guidance, other references were consulted including USDA FoodData Central's SR Legacy, FNDDS and Branded Foods databases (USDA/ARS, 2024), American Egg Board (American Egg Board, 2021), the U.S. Dietary Guidelines for Americans (USDA/USHHS, 2020) and serving sizes from product labels (e.g., infant formulas). "Similar USDA item" is referenced for a few foods where the weight of an identical food was not available in SR Legacy, so the weight of a comparable food in SR Legacy was used. For ease of use, some item weights per serving are rounded within a few grams.

In Release 4.0, several amendments were made to the iodine dataset to harmonize analytical values across the previous releases. First, standard deviations were removed for a total of 13 foods with small sample sizes (n = 2). This change was made after consultation with USDA-ARS's Director of the Statistics Group (Northeast Area) who agreed that the samples means and ranges adequately describe their sampling distribution. Significant figures for all foods were also reduced to one digit after the decimal point to adjust for ICP-MS's level of analytical precision and to correct Excel rounding errors after descriptive statistics were calculated. Finally, the serving size reference "RACC" was replaced with "FDA" in the per serving data format for 14 foods. The former was repetitive terminology because FDA is already denoted as "FDA= Food and Drug Administration's Reference Amounts Customarily Consumed" throughout the documentation and as a dataset footnote.

Data discussion

Care should be taken in using data means, especially where the number of analytical samples (n) is very low. As seen in foods having very large numbers (n) of samples analyzed, the variability in the iodine content can be high. However, even where the number of food samples is small, these data provide an estimate of the iodine content and indicate where additional data would be useful, or conversely, where it would not be productive to allocate research resources.

Also affecting the reporting of data on variability is the combining of food samples. In some cases, FDA and/or USDA laboratories composited sample material from the same food together prior to analysis. Subsequently, the composite samples were analyzed for iodine content. The resulting mean values are the best estimates of content but lack information on variability. For the FDA national samples (n=1) and for the milk, egg and salt data reported by USDA, samples were collected from one geographic region and not combined with any other samples before analysis.

Reported iodine estimates assumed FDA measurements below the LOD or RL as zero (0), with trace values between the LOD and LOQ reported as the detected iodine concentrations. In previous database releases (Release 1.0 – Release 3.0), USDA reported data below their LOQ as "<." Similarly, when the USDA's LOQ was the only information available for a food, "<" along with the LOQ was given, but if FDA had data on the same food type, an estimate of the USDA value was made based on the FDA data and included in the calculations. Using only the higher numbers would have biased the values, so the values below LOQ were estimated using business rules established for the USDA previous database for foods, SR. Release 4.0 expanded the business rule to all USDA values below the LOQ to improve calculated estimates. Values "<" USDA's LOQ are now presented as "7.4", and "<" the LOD as "1.5." Consequently, the values for a total of 73 samples representing 35 foods were revised, resulting in slightly lower iodine content for some foods.

It is clear from the data that when iodate dough conditioner is used in bakery production of breads, iodine content is far higher than when that conditioner is not used. Therefore, we separated out the data for breads known or suspected to contain iodate conditioners from those that did not and gave them separate entries in the database. These are white bread, whole wheat bread, white bread buns, and one type of fast-food sandwich bun. All of these have descriptions indicating iodate dough conditioner has been used or is likely to have been used and have an NDB and/or TDS number with an asterisk. While high, none of the iodine values for these breads exceed the regulatory maximum based on the amount of iodate allowed by the FDA (FDA, 2024b).

Our analyses of the convenience sampling of shelf-stable soy beverages revealed two samples were considerably higher in iodine content than the other four samples. The ingredient labels of the higher-iodine samples indicated the presence of seaweed or its derivative, thus influencing iodine levels. Therefore, the seaweed-containing soy beverages have been reported separately in the datasets.

We have excluded a number of foods with high iodine levels that were likely due to presence of erythrosine (also known as FD&C Red No. 3). Erythrosine is a cherry-colored dye used in foods such as decorating gels, glace cherries and other fruits, some candies, salmon spreads, bakery and snack foods, jellies, ice creams, and popsicles (Gupta et al., 2006; Wenlock and Buss, 1982).[1] Most forms of iodine in food are generally considered very bioavailable (easily absorbed), as high as 99% (Gonzali et al., 2017). The iodine content of erythrosine, however, has been found to have low bioavailability and thus is unlikely to be a significant contributor to iodine status (Jahreis et al., 2001).

These data contain only analytical data for iodine content of the foods. In some cases, the food described may not be in the form as consumed, e.g. raw rather than cooked. A direct estimate from raw to prepared is

[1] Another widely used red food dye, FD&C Red No. 40, contains no iodine.

difficult since iodine could, for example, be lost during heating or by moving into cooking water. Estimated prepared values would need to be calculated by the researcher. A retention factor is a way to quantitate the amount of a nutrient remaining in the food after preparation. The principle of using a nutrient retention factor is based on investigations by Reinivuo et al., 2009; Schakel et al., 1997; and Murphy et al., 1975. The appropriate retention factor reflects the effects of food preparation on the food's nutrient content (USDA, 2007). For foods of significant iodine content with only raw data available, additional studies are planned to obtain cooked data for future releases of this database as well as to determine retention factors.

Conclusions

The iodine dataset containing a total of 478 entries is a compilation of both USDA and FDA data for a wide variety of foods. As more data become available, subsequent releases with additional foods are anticipated. These data provide guidance for selecting additional foods for iodine analysis. These data also show where expanding the sample size with more analyses for foods with substantial iodine content would be beneficial.

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Appendix A: Perchlorate

Perchlorate (ClO_4^-) is a stable anion which forms naturally in the atmosphere. It is postulated that perchlorate may deposit in trace levels via precipitation to arid US regions such as the Texas Panhandle (Dasgupta et al., 2005). Perchlorate is also synthetically manufactured for use in solid rocket propellants, fireworks, and safety flares (Dasgupta et al., 2006). The U.S. Environmental Protection Agency (EPA) does not regulate perchlorate in drinking water, but based on current epidemiological evidence, maintains a daily oral exposure reference dose of 0.007 mg/kg-day (Greer et al., 2002; EPA, 2005; EPA, 2022a).

The thyroid gland is responsible for regulating metabolism and is critical during pregnancy for the growth and development of newborns. Excessive perchlorate exposure causes disruption to the sodium/iodide symporter (NIS), the plasma membrane glycoprotein involved with the production of thyroid hormones (Wolff, 1998; Pleus and Corey, 2018). Perchlorate has the highest potency of all known iodine uptake inhibitors and competes against iodide to block the NIS directly, resulting in the depletion of thyroid hormones (Tonacchera et al., 2004). Because of its effectiveness, perchlorate has been used historically as a drug to treat hyperthyroidism (Wolff, 1998). Perchlorate's thyroid-suppressing effects are temporary and subside once exposure is removed.

Due to monitoring efforts by the U.S. EPA, perchlorate drinking water levels are of minimal public health concern (EPA, 2022b). Therefore, dietary perchlorate is proposed as the main exposure source in the United States. The FDA maintains the largest dataset of perchlorate in foods and beverages. Perchlorate has been detected in many food categories including dairy, fruits, vegetables, meats, and legumes and grains (FDA, 2017; FDA, 2018) although amounts are very small.

In conclusion, current evidence suggests that nearly all exposure to dietary perchlorate is below the current reference dose and thus at safe levels (Abt et al., 2018). Furthermore, scientific evidence suggests no causal relationship exists between changes in thyroid hormone levels of the US population and environmental perchlorate exposure levels (Pleus and Corey, 2018; Charnley, 2008). Therefore, despite perchlorate's potency and thyroid disruption potential, it is likely a minor contributor to iodine inhibition in the thyroid gland.

The MAFCL FNR group's research will continue to evaluate the assessment of iodine uptake inhibitors for health outcomes.

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Appendix B: Thiocyanate

Thiocyanate (SCN^-) is a moderately potent iodine uptake inhibitor and biotransformation metabolite (Tonacchera et al., 2004). Exposure sources conducive to thiocyanate generation are cyanide produced during cigarette smoking and the ingestion of two plant products: cyanogenic glycosides and glucosinolates (Laurberg et al., 2009). Thiocyanate is not subject to regulation in the United States because it is a naturally occurring metabolite.

Detoxification from exposure sources into thiocyanate occurs via three metabolic routes:

1. Cyanide from cigarette smoke is primarily hydrolyzed in the cyanide metabolic pathway, facilitated by the enzyme rhodanese, to produce thiocyanate (Logue et al., 2010).
2. Cyanogenic glycosides are a naturally occurring class of plant toxins. Disruption to plant tissue creates hydrogen cyanide (cyanogenesis) which is principally detoxified to thiocyanate (Gleadow and Møller, 2014).
3. Glucosinolates, secondary plant metabolites found in the Brassicaceae family, are complex compounds hypothesized to offer many protective health benefits. Plants in the Brassicaceae family also contain a defensive enzyme called myrosinase which breaks down glucosinolates. When Brassicaceae plant tissue is disrupted, myrosinase hydrolyzes glucosinolates to produce several compounds, including thiocyanate (Barba et al., 2016). Myrosinase is denatured when plants are cooked; therefore, glucosinolates may also be broken down naturally by gut microbiota (Barba et al., 2016; Agerbirk et al., 2008).

The thyroid gland is responsible for regulating metabolism and is critical during pregnancy for the growth and development of newborns. Thiocyanate disrupts at least two thyroid processes (Willemin and Lumen, 2017). High levels of thiocyanate compete against iodide to temporarily block the sodium/iodide symporter (NIS) channel, the plasma membrane protein complex involved in the production of thyroid hormones. Excess thiocyanate also disrupts biochemical processes in the thyroid gland involving iodine (organification). Thiocyanate's thyroid-suppressing effects are temporary and subside once exposure is removed.

Due to their ubiquity in food, research suggests dietary exposure to thiocyanates far outweighs dietary exposure to perchlorate (De Groef et al., 2006; Eisenbrand and Gelbke, 2016). However, quantitative data are scarce because thiocyanate is only formed after disrupting plant cells through chopping, cooking, and other processes. Thiocyanate has been detected in dairy products, infant formula, and vegetables (Laurberg et al., 2002; Niemann and Anderson, 2008; Sanchez et al., 2007). Epidemiological evidence suggests no association between thyroid function and urinary thiocyanate (Mortensen et al., 2016; Horton et al., 2015; Leung et al., 2011; Pearce et al., 2010; Steinmaus et al., 2013; Lewandowski, Peterson, and Charnley, 2015). Furthermore, negative effects of dietary thiocyanate may be mitigated by modest iodine fortification (Agerbirk et al., 2008). Therefore, dietary consumption levels of thiocyanates do not appear to pose an adverse effect to human health and are likely of low concern when evaluating the risk of iodine uptake inhibition.

The MAFCL FNR group's research will continue to evaluate the assessment of iodine uptake inhibitors for health outcomes.

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USDA, FDA and ODS-NIH Database for the Iodine Content of Common Foods mcg per 100 grams Release 4.0, October 2024										
DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s) Analyzed
Dairy and Eggs										
91	01001	164	Butter, salted	11	4.6	0.6	3.7	5.9	FDA	2016-2020
359	01192		Cheese product, made with 2% reduced fat milk	1	54				USDA	2013
24	01253 (100297)	10	Cheese, American, processed	37	57	18	29	112	FDA/USDA[C]	2011,2016-2020,2023
25	01009	12	Cheese, cheddar (sharp/mild)	38	46	13	27	106	FDA/USDA	2013,2016-2020
450	01019		Cheese, feta, whole milk, crumbled	8	48	21	30	76	USDA	2022
190	01025 (100296)	391	Cheese, Monterey Jack	36	40	15	12	77	FDA/USDA[C]	2017-2020,2023
191	01029	392	Cheese, mozzarella	30	51	10	27	67	FDA/USDA	2013,2017-2020
349	01032		Cheese, parmesan, grated	9	82	38	45	175	USDA	2013,2022
348	43379		Cheese, processed, Swiss, low fat	1	60				USDA	2012
491	01035 (100298)		Cheese, provolone	8	64	13	39	83	USDA[c]	2023
350	01036		Cheese, ricotta, whole milk	1	66				USDA	2017
127	01040	236	Cheese, Swiss	35	137	113	33	440	FDA	2016-2020
494	01267 (100301)		Cheese, queso cotija	7	65	33	18	114	USDA[C]	2023
492	01228 (100300)		Cheese, queso fresco	8	80	38	24	125	USDA[c]	2023
493	(100299)		Cheese, queso Oaxaca	8	46	40	12	135	USDA[C]	2023
161	01015	332	Cottage cheese, creamed, reduced fat	11	37	7.2	25	47	FDA/USDA	2013,2016-2020
489	01012		Cottage cheese, full fat, small or large curd	10	46	13	20	63	USDA	2022
128	01017	237	Cream cheese	18	36	10	21	55	FDA/USDA	2016-2020,2022
DB_ID	Standard Reference	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s) Analyzed

DB_ID	(Foundation Foods[A]) FDC NDB No. / Standard Reference	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
94	01068	168	Cream substitute, non-dairy, fluid	10	0.6	0.2	0.4	1.0	FDA	2016-2020
351	01053		Cream, heavy whipping, fluid	9	21	7.0	5.3	30	USDA	2013,2022
93	01049	167	Cream, half & half	36	29	6.1	18	46	FDA/USDA	2013,2016-2020
362	01258		Egg, white, dried, stabilized, glucose reduced	15	34	11	22	59	USDA	2018
358	01172		Egg, white, raw, frozen, pasteurized	6	1.5	0.0	1.5	1.5	USDA	2018
355	01133		Egg, whole, dried	17	274	52	202	407	USDA	2018
353	01123		Egg, whole, raw, fresh	24	49	21	27	115	USDA	2019
357	01171		Egg, whole, raw, frozen, pasteurized	14	62	13.9	45	81	USDA	2018
356	01137		Egg, yolk, dried	17	349	66	261	437	USDA	2018
354	01126		Egg, yolk, raw, frozen, pasteurized	15	177	52	76	267	USDA	2018
34	01129	37	Eggs, hard-boiled	35	61	29.6	14	120	FDA	2016-2020
336	01132	35	Eggs, scrambled with oil	7	43	13	20	57	FDA	2016-2017
192	19270	393	Ice cream, chocolate	28	31	4.8	24	42	FDA	2017-2020
341	01243	177	Ice cream, lowfat, vanilla	7	45	9.8	27	56	FDA	2016-2017
143	19095	286	Ice cream, regular (not lowfat), vanilla	34	38	5.8	26	53	FDA	2016-2020
446	01088		Milk, buttermilk, lowfat	8	34	5.3	26	42	USDA	2022
22	01103	3	Milk, chocolate, lowfat, fluid	37	30	6.8	17	44	FDA/USDA	2014,2016-2020
21	01079	2	Milk, reduced fat (2%), fluid	59	36	13	20	103	FDA/USDA	2016-2020
352	01082		Milk, lowfat (1%), fluid	24	36	15	13	85	USDA	2018
23	01085	4	Milk, skim, fluid	59	34	9.2	15	65	FDA/USDA	2016-2020
20	01077	1	Milk, whole, fluid	59	34	11	17	84	FDA/USDA	2016-2020
154	01056	300	Sour cream	18	31	5.8	22	48	FDA/USDA	2016-2020,2022
290		333	Sour cream dip, any flavor	7	25	6.1	16	31	FDA	2016-2017
295	01298	409	Yogurt, frozen, vanilla	27	46	9.4	26	76	FDA	2017-2020

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
447	01293		Yogurt, Greek, whole milk, plain	8	42	19	17	79	USDA	2022
361	01256		Yogurt, Greek, plain, nonfat	6	51	3.5	45	56	USDA	2013
363	01284		Yogurt, Greek, strawberry, lowfat	1	42				USDA	2014
364	01285		Yogurt, Greek, strawberry, nonfat	2	41		39	43	USDA	2007
365	01286		Yogurt, Greek, vanilla, nonfat	2	50		49	52	USDA	2014
126	01122	235	Yogurt, fruit-flavored, lowfat	11	31	6.5	23	43	FDA/USDA	2013,2016-2020
490	01117 (100295)		Yogurt, regular, plain, nonfat	8	59	36	33	146	USDA[C]	2023
222	01220	521	Yogurt, vanilla, lowfat	3	34	3.0	31	37	FDA	2018-2020
448	01116		Yogurt, whole milk, plain	8	32	12	22	57	USDA	2022
Spices and Miscellaneous										
487		902	Baking powder	1	0.0				FDA	2020
488		910	Cocoa powder	1	0.0				FDA	2020
19	02047	909	Salt, table, iodized	26	5213	1329	3410	8900	FDA/USDA	2017-2018,2020
372			Sea salt, iodized	9	4663	1143	2250	6080	USDA	2018
373		904	Sea salt, non-iodized	28	1.5	0.3	0.0	1.5	FDA/USDA	2018,2020
Soups, Sauces, Gravies and Condiments										
273		532	Broth, chicken, ready-to-use from carton	3	0.7	0.2	0.5	0.9	FDA	2018-2020
180	06116	374	Brown gravy, canned or bottled	10	1.5	0.3	1.0	2.0	FDA	2016-2020
412	27052		Dip, salsa con queso (salsa with cheese)	6	19	14	7.4	47	USDA	2012-2013
98	11935	173	Ketchup, tomato, bottled	10	1.0	0.4	0.6	1.9	FDA	2016-2020
152	02046	298	Mustard, yellow, plain	10	0.4	0.4	0.0	1.0	FDA	2016-2020
177	06164	359	Salsa, tomato, bottled	10	1.6	0.8	0.0	2.9	FDA	2016-2020
203	06150	405	Sauce, barbecue, bottled	27	2.7	1.3	0.9	7.0	FDA	2018-2020
366	06179		Sauce, fish, ready-to-serve	1	21				USDA	2008

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
219	16123/16124	518	Sauce, soy	3	0.5	0.1	0.4	0.6	FDA	2018-2020
12	27050	373	Sauce, sweet & sour, bottled	7	0.7	0.4	0.4	1.5	FDA	2016-2017
221	06931	520	Sauce, tomato pasta, bottled	3	1.6	0.4	1.3	2.1	FDA	2018-2020
5	06404	283	Soup, bean with bacon/pork, canned, condensed, prepared with water	7	0.3	0.1	0.1	0.4	FDA	2016-2017
274		533	Soup, broccoli cheese, canned, ready to eat (RTE)	3	4.6	0.2	4.5	4.8	FDA	2018-2020
246		155	Soup, chicken noodle, canned, ready to eat (RTE)	10	0.9	0.2	0.7	1.5	FDA	2016-2020
230	06030	534	Soup, clam chowder, New England, canned, ready to eat (RTE)	3	11	7.9	6.3	20	FDA	2018-2020
319		285	Soup, clam chowder, New England, canned, condensed, prepared with whole milk	7	20	5.1	13	27	FDA	2016-2017
275		535	Soup, cream of mushroom, canned, ready to eat (RTE)	3	2.2	0.1	2.1	2.3	FDA	2018-2020
276		536	Soup, cream of potato, canned, ready to eat (RTE)	3	3.3	0.4	3.0	3.7	FDA	2018-2020
262		367	Soup, ramen noodles, prepared with water	10	0.3	0.4	0.0	0.9	FDA	2016-2020
247		156	Soup, tomato, canned, ready to eat (RTE)	10	0.7	0.2	0.3	1.1	FDA	2016-2020
231	06742	537	Soup, vegetable beef, canned, ready to eat (RTE)	3	1.8	1.1	0.8	2.9	FDA	2018-2020
312	06471	157	Soup, vegetable beef, canned, condensed, prepared with water	7	1.1	0.4	0.8	2.0	FDA	2016-2017
277		538	Soup, vegetable, canned, ready to eat (RTE)	3	0.9	0.0	0.9	0.9	FDA	2018-2020
Baby Foods										
302	03165	730	Baby food, apples with berries	8	0.1	0.1	0.0	0.3	FDA	2016-2017,2020
240	03163	731	Baby food, apples with fruit other than berries	15	0.2	0.2	0.0	0.5	FDA	2016-2020

	(Foundation Foods[A]) FDC NDB No.									
122	03117	225	Baby food, applesauce	15	0.0	0.1	0.0	0.2	FDA	2016-2020
473		755	Baby food, apple and sweet potato with cinnamon, pouch	5	0.1	0.2	0.0	0.3	FDA	2019
470		751	Baby food, apple, spinach and avocado, bowl/pouch	5	2.5	0.2	2.3	2.7	FDA	2019
474		756	Baby food, apple, sweet potato and pineapple, pouch	5	0.5	0.2	0.4	0.7	FDA	2019
298	03143	717	Baby food, apricots with mixed fruit	7	0.3	0.1	0.2	0.4	FDA	2016-2017
157	43546	313	Baby food, bananas	15	0.2	0.4	0.0	1.7	FDA	2016-2020
463		744	Baby food, banana and blueberry, pouch	5	0.6	0.4	0.0	0.9	FDA	2019
462		743	Baby food, banana and strawberry, glass jar	5	0.2	0.2	0.0	0.4	FDA	2019
464		745	Baby food, banana, apple and pear, plastic jar	5	0.0	0.0	0.0	0.0	FDA	2019
461		742	Baby food, banana, blackberry and blueberry, plastic jar	5	0.2	0.4	0.0	0.8	FDA	2019
123	03131	226	Baby food, peaches	29	0.1	0.2	0.0	0.9	FDA	2016-2020
124	03133	227	Baby food, pears	15	0.0	0.1	0.0	0.1	FDA	2016-2020
296	03159	713	Baby food, pears and pineapple	7	0.2	0.1	0.0	0.3	FDA	2016-2017
465		746	Baby food, organic pears and spinach, pouch	5	0.7	0.2	0.5	1.0	FDA	2019
468		749	Baby food, pear, blueberry, apple and avocado, pouch	5	0.4	0.1	0.3	0.6	FDA	2019
478		760	Baby food, pear, mango, avocado, pouch	5	0.1	0.3	0.0	0.6	FDA	2019
297	03170	714	Baby food, plums/prunes with apples or pears	7	0.6	0.7	0.0	2.2	FDA	2016-2017
241	03139	736	Baby food, prunes	8	1.0	0.6	0.5	2.4	FDA	2018-2020
477		759	Baby food, mango, carrot and turmeric, bowl	2	0.7		0.7	0.7	FDA	2019
459		740	Baby food, mango, glass jar	5	0.4	0.0	0.3	0.4	FDA	2019
460		741	Baby food, mango, pouch	5	0.6	0.1	0.6	0.7	FDA	2019
DB_ID	**Standard Reference (Foundation Foods[A])**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**

DB_ID	FDC NDB No. Standard Reference (Foundation Foods[A])	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
479		761	Baby food, mango, yellow zucchini, corn and turmeric, pouch	2	1.5		1.3	1.6	FDA	2019
125	03166	230	Baby food, juice, apple	15	1.0	1.2	0.0	3.8	FDA	2016-2020
237	44074	712	Baby food, juice, grape	15	0.8	0.5	0.3	1.8	FDA	2016-2020
236	43408	711	Baby food, juice, pear	15	0.3	0.3	0.0	1.1	FDA	2016-2020
480		762	Baby food, juice, mixed fruit	3	0.0	0.0	0.0	0.0	FDA	2019
117	03100	218	Baby food, carrots	21	0.5	0.4	0.0	1.4	FDA	2016-2020
118	03092	219	Baby food, green beans	15	0.3	0.4	0.0	1.2	FDA	2016-2020
121	03121	223	Baby food, peas	15	0.1	0.1	0.0	0.2	FDA	2016-2020
466		747	Baby food, peas and spinach, glass jar	1	0.0				FDA	2019
469		750	Baby food, peas, green beans and avocado, pouch	5	0.4	0.1	0.3	0.5	FDA	2019
476		758	Baby food, pumpkin, banana, papaya and cardamom, bowl	3	0.2	0.2	0.0	0.3	FDA	2019
159	03105	320	Baby food, squash	15	0.4	0.4	0.0	1.2	FDA	2016-2020
120	03109	221	Baby food, sweet potatoes	15	0.4	0.2	0.0	0.8	FDA	2016-2020
475		757	Baby food, sweet potato, apple and corn, pouch	5	0.8	0.2	0.5	0.9	FDA	2019
467		748	Baby food, sweet potato, apple and spinach, pouch	5	1.1	0.3	0.8	1.3	FDA	2019
119	03279	220	Baby food, vegetables, mixed	15	0.4	0.2	0.0	0.9	FDA	2016-2020
482	03189	764	Baby food, cereal, oatmeal, dry	7	0.4	1.1	0.0	2.9	FDA	2019-2020
483		765	Baby food, cereal, rice, dry	9	0.0	0.0	0.0	0.0	FDA	2019-2020
484		766	Baby food, cereal, mixed, dry	7	1.0	1.7	0.0	3.9	FDA	2019-2020
278		701	Baby food, cereal, mixed, prepared with water	8	0.0	0.0	0.0	0.1	FDA	2016-2018
300		725	Baby food, cereal, oatmeal with fruit, prepared with water	7	0.0	0.1	0.0	0.1	FDA	2016-2017

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
	FDC NDB No.									
258		323	Baby food, cereal, oatmeal, prepared with water	8	0.1	0.1	0.0	0.4	FDA	2016-2018
259		324	Baby food, cereal, rice, prepared with water	20	0.0	0.1	0.0	0.3	FDA	2016-2019
471		753	Baby food, organic yogurt, apple, pumpkin, cinnamon and quinoa, pouch	4	11	2.1	8.8	13	FDA	2019
238	43523	721	Baby food, fruit yogurt dessert	15	23	5.5	14	32	FDA	2016-2020
481		763	Baby food, yogurt, peach pear	3	33	3.8	30	37	FDA	2019
257		317	Baby food, biscuits, teething	15	20	8.0	3.0	28	FDA	2016-2020
299	03214	723	Baby food, cookies, arrowroot	8	8.9	2.2	6.1	13	FDA/USDA	2015-2017
280		733	Baby food, finger foods, puffed snack	8	0.3	0.9	0.0	2.6	FDA	2018-2020
432	42284		Baby food, finger food, baked product, cereal, fortified	1	7.4				USDA	2014
114	03069	214	Baby food, chicken noodle dinner	15	0.5	0.7	0.0	2.6	FDA	2016-2020
301	43008	726	Baby food, chicken with rice	7	0.7	0.5	0.0	1.3	FDA	2016-2017
279		732	Baby food, macaroni and cheese with vegetables	14	7.0	1.3	4.2	8.8	FDA	2016-2020
115	03045	215	Baby food, pasta, tomato and beef	15	2.0	1.4	0.0	4.6	FDA	2016-2020
242	03046	737	Baby food, ravioli, cheese-filled, with tomato sauce	8	4.6	0.6	3.7	5.8	FDA	2018-2020
111	03002	205	Baby food, beef and broth/gravy	15	1.3	0.8	0.0	3.0	FDA	2016-2020
343	03013	207	Baby food, chicken and broth/gravy	7	28	8.2	11	35	FDA	2016-2017
160	03016	328	Baby food, turkey and broth/gravy	15	1.1	0.5	0.0	2.5	FDA	2016-2020
116	03083	216	Baby food, turkey and rice	15	0.5	0.4	0.0	1.8	FDA	2016-2020
472		754	Baby food, turkey, quinoa, apple and sweet potato, pouch	5	0.7	0.1	0.6	0.7	FDA	2019
112	03055	211	Baby food, vegetables and beef	10	0.5	0.4	0.0	1.1	FDA	2016-2020
113	03073	212	Baby food, vegetables and chicken	10	0.5	0.3	0.0	0.9	FDA	2016-2020

239	03085	728	Baby food, vegetables and turkey	14	2.1	2.4	0.0	6.7	FDA	2016-2020
485		767	Baby food, infant formula, milk-based, powder	2	115		100	130	FDA	2019-2020
486		768	Baby food, infant formula, soy-based, powder	2	98		97	98	FDA	2019-2020
249		202 /734	Baby food, Infant formula, milk-based, iron fortified, ready-to-feed	8	13	1.7	12	16	FDA	2016-2018
321		309/ 735	Baby food, Infant formula, soy-based, ready-to-feed	8	11	4.4	0.6	15	FDA	2016-2018
283		738	Baby food, water, baby, bottled	8	0.0	0.0	0.0	0.0	FDA	2018-2020
Fats and Oils										
90	04691	162	Margarine, salted	10	1.2	1.5	0.0	3.9	FDA	2016-2020
92	04018	166	Mayonnaise, regular, bottled	10	5.3	1.6	2.6	7.6	FDA	2016-2020
182	04053	378	Oil, olive	10	0.2	0.2	0.0	0.5	FDA	2016-2020
183	04044	379	Oil, vegetable	10	0.0	0.0	0.0	0.0	FDA	2016-2020
433	43016		Salad dressing, coleslaw, bottled	1	1.5				USDA	2017
329	43215	376	Salad dressing, creamy/buttermilk type, low-calorie, bottled	7	13	2.0	9.2	15	FDA	2016-2017
328		375	Salad dressing, creamy/buttermilk type, regular, bottled	7	8.4	1.6	7.1	12	FDA	2016-2017
181	04114	377	Salad dressing, Italian, regular, bottled	10	0.7	0.4	0.4	1.7	FDA	2016-2020
217	04640	516	Salad dressing, ranch, low-calorie, bottled	3	7.8	0.4	7.5	8.2	FDA	2018-2020
218	04639	517	Salad dressing, ranch, regular, bottled	6	9.9	5.1	5.9	19	FDA/USDA	2013,2018-2020
Fruit										
54	09003	78	Apple, red, with peel, raw	35	0.1	0.1	0.0	0.6	FDA	2016-2020
59	09020	84	Applesauce, bottled	10	0.1	0.1	0.0	0.4	FDA	2016-2020
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
324	09026	348	Apricots, canned in heavy/light syrup	7	6.2	5.0	1.3	15	FDA	2016-2017

67	09037	97	Avocado, raw	35	0.2	0.7	0.0	3.4	FDA	2016-2020
56	09040	80	Banana, raw	35	0.2	0.6	0.0	3.5	FDA	2016-2020
196	09050	398	Blueberries, raw	28	0.3	0.4	0.0	1.2	FDA	2017-2020
64	09181	89	Cantaloupe, raw/frozen	35	0.3	0.3	0.0	1.3	FDA	2016-2020
62	09099	87	Fruit cocktail, canned in light syrup	10	3.9	3.1	0.0	10	FDA	2016-2020
65	09111	92	Grapefruit, raw	35	0.1	0.2	0.0	0.7	FDA	2016-2020
63	09132	88	Grapes, seedless, red/green, raw	35	0.4	0.3	0.0	1.1	FDA	2016-2020
453	09176	412	Mango, raw/frozen	6	0.1	0.2	0.0	0.4	FDA	2020
153	09193	299	Olives, black, pitted	10	2.1	1.6	0.0	5.2	FDA	2016-2020
55	09200	79	Orange, raw	35	0.2	0.2	0.0	1.0	FDA	2016-2020
345	09239	254	Peach, canned in light/medium syrup	7	6.2	3.6	1.3	10	FDA	2016-2017
58	09236	83	Peach, raw/frozen	35	0.2	0.4	0.0	2.6	FDA	2016-2020
346	09256	255	Pear, canned in light syrup	7	0.1	0.0	0.1	0.2	FDA	2016-2017
60	09252	85	Pear, with peel, raw	35	0.1	0.2	0.0	0.7	FDA	2016-2020
309	09354	93	Pineapple, canned in juice	7	1.8	2.3	0.6	7.1	FDA	2016-2017
194	09266	396	Pineapple, raw/frozen	28	0.3	0.4	0.0	2.3	FDA	2017-2020
66	09298	95	Raisins	10	1.7	1.3	0.0	3.5	FDA	2016-2020
61	09316	86	Strawberries, raw/frozen	35	0.3	0.3	0.0	1.6	FDA	2016-2020
57	09326	81	Watermelon, raw/frozen	35	0.1	0.2	0.0	0.8	FDA	2016-2020
Vegetables										
74	11012	115	Asparagus, fresh/frozen, boiled	35	0.9	0.7	0.0	3.9	FDA	2016-2020
340	11084	131	Beets, canned	7	0.4	0.4	0.1	1.2	FDA	2016-2017
72	11742	113	Broccoli, fresh/frozen, boiled	35	0.5	0.6	0.0	2.7	FDA	2016-2020
140	11099	263	Brussels sprouts, fresh/frozen, boiled	35	0.0	0.1	0.0	0.5	FDA	2016-2020
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
331	11110	110	Cabbage, fresh, boiled	8	0.1	0.1	0.0	0.3	FDA	2016-2017
204	11109	406	Cabbage, raw	27	0.0	0.0	0.0	0.0	FDA	2018-2020

175	11960	356	Carrot, baby, raw	35	0.6	1.1	0.0	3.6	FDA	2016-2020
313	11125	259	Carrot, fresh, peeled, boiled	7	0.5	0.6	0.0	1.6	FDA	2016-2017
75	11136	116	Cauliflower, fresh/frozen, boiled	35	0.6	0.7	0.0	3.0	FDA	2016-2020
73	11143	114	Celery, raw	35	1.7	2.1	0.0	8.9	FDA	2016-2020
70	11162	108	Collards, fresh/frozen, boiled	35	0.8	1.8	0.0	7.4	FDA	2016-2020
45	11172	55	Corn, canned, drained solids	10	0.3	0.3	0.0	0.9	FDA	2016-2020
44	11179	54	Corn, frozen, boiled	35	0.2	1.2	0.0	7.0	FDA	2016-2020
79	11206	123	Cucumber, peeled, raw	35	0.5	0.4	0.0	2.1	FDA	2016-2020
315	11210	265	Eggplant, fresh, without peel, boiled	14	0.2	0.3	0.0	1.0	FDA	2016-2018
250		410	Eggplant, with peel, baked	21	0.6	0.5	0.0	1.4	FDA	2018-2020
454	11215	413	Garlic, raw	6	1.0	1.5	0.0	3.1	FDA	2020
78	11729	122	Green beans, canned, drained solids	10	0.3	0.5	0.0	1.2	FDA	2016-2020
77	11061	121	Green beans, fresh/frozen, boiled	35	0.6	0.7	0.0	2.6	FDA	2016-2020
452	11236	411	Kale, fresh, pan-cooked	6	1.8	2.1	0.0	4.4	FDA	2020
71	11252	109	Lettuce, iceberg, raw	35	0.2	0.4	0.0	1.8	FDA	2016-2020
176	11253	357	Lettuce, leaf, raw	35	1.1	1.4	0.0	8.0	FDA	2016-2020
36	11032	42	Lima beans, immature, frozen, boiled	9	0.2	0.4	0.0	0.9	FDA	2016-2019
142	11584	268	Mixed vegetables, frozen, boiled	10	0.2	0.3	0.0	0.9	FDA	2016-2020
141	11260	264	Mushrooms, raw	35	0.3	0.2	0.0	1.1	FDA	2016-2020
451		130	Mushrooms, canned, drained solids	1	0.0				FDA	2020
434			Nori, seaweed, dried	3	2317	618	1640	2850	USDA	2018
317	11279	267	Okra, fresh/frozen, boiled	7	1.0	0.6	0.3	1.8	FDA	2016-2017
82	11282	128	Onion, mature, raw	35	0.3	0.4	0.0	1.6	FDA	2016-2020
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
37	11313	46	Peas, green, fresh/frozen, boiled	10	0.1	0.2	0.0	0.5	FDA	2016-2020
80	11333	125	Pepper, bell, green, raw	35	0.2	0.5	0.0	2.7	FDA	2016-2020
89	11937	161	Pickles, dill, cucumber	10	0.7	0.5	0.3	1.7	FDA	2016-2020

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
83	11367	136	Potato, peeled, boiled[1]	34	0.0	0.1	0.0	0.6	FDA	2016-2020
84	11674	137	Potato, with peel, baked	35	0.5	1.4	0.0	7.0	FDA	2016-2020
293	11371	354	Potatoes, mashed, prepared from fresh	7	6.2	3.6	3.8	14	FDA	2016-2017
220	11549	119/ 519	Sauce, tomato, canned/bottled	10	0.9	0.5	0.0	1.5	FDA	2016-2020
1	11458	107	Spinach, fresh/frozen, boiled	8	3.9	2.9	1.0	8.1	FDA	2016-2017
206	11457	408	Spinach, raw	27	6.7	7.3	1.6	40	FDA	2018-2020
332	11468	124	Squash, summer, fresh/frozen, boiled	8	0.3	0.1	0.1	0.5	FDA	2016-2017
205	11478	407	Squash, summer, zucchini, fresh/frozen, boiled	27	0.6	1.0	0.0	4.6	FDA	2018-2020
81	11644	126	Squash, winter (Hubbard or acorn), fresh/frozen, boiled	35	0.8	1.1	0.0	5.3	FDA	2016-2020
195	11508	397	Sweet potato, baked, peel removed	28	1.5	1.5	0.0	6.2	FDA	2017-2020
325	11514	358	Sweet potato, canned	7	0.7	0.8	0.0	2.3	FDA	2016-2017
76	11529	117	Tomato, raw	35	0.2	0.3	0.0	1.2	FDA	2016-2020
316	11567	266	Turnip, fresh/frozen, boiled	7	0.3	0.2	0.0	0.5	FDA	2016-2017
Legumes										
270		527	Beans, black, canned, drained	3	0.0	0.0	0.0	0.0	FDA	2018-2020
456		545	Beans, garbanzo (chickpeas), canned, drained solids	1	0.0				FDA	2020
271		528	Beans, kidney, canned, drained	3	0.0	0.0	0.0	0.0	FDA	2018-2020
228	16146	529	Beans, pinto, canned, drained	3	0.9	1.6	0.0	2.8	FDA	2018-2020
304	16043	38	Beans, pinto, from dry, boiled	7	0.0	0.1	0.0	0.2	FDA	2016-2017
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
167	16103	341	Beans, refried, canned	10	0.8	0.8	0.0	2.5	FDA	2016-2020
272		530	Beans, white, canned, drained	3	0.9	1.5	0.0	2.6	FDA	2018-2020
323	16050	342	Beans, white, from dry, boiled	7	0.1	0.2	0.0	0.4	FDA	2016-2017
35	16009	39	Beans, with pork, canned	10	0.2	0.2	0.0	0.5	FDA	2016-2020
457		546	Lentils, dry, cooked	1	0.0				FDA	2020

38	16167	47	Peanut butter, smooth/creamy	10	0.4	0.4	0.0	1.2	FDA	2016-2020
39	16090	48	Peanuts, dry roasted, salted	10	0.5	0.5	0.0	1.1	FDA	2016-2020
458	16126	547	Tofu, firm, plain, drained solids	1	0.0				FDA	2020
18	43137	544	Veggie burger, soy based, baked	3	9.5	1.6	7.9	11	FDA	2018-2020
Nuts and Seeds										
227	12061	526	Almonds, shelled	3	0.0	0.0	0.0	0.0	FDA	2018-2020
455	12586	414	Nuts, cashew, oil roasted, with salt added	1	0.0				FDA	2020
168	12537	343	Seeds, sunflower, shelled, salted, roasted	10	0.1	0.3	0.0	0.9	FDA	2016-2020
201	12155	403	Walnuts, shelled	23	0.0	0.0	0.0	0.0	FDA	2017-2020
Beverages including Juices										
110	14003	198	Alcohol, beer	10	0.9	0.5	0.2	2.1	FDA	2016-2020
207	14051	500	Alcohol, distilled, vodka	3	0.0	0.0	0.0	0.0	FDA	2018-2020
248		200	Alcohol, distilled, whiskey/scotch	3	0.0	0.0	0.0	0.0	FDA	2018-2020
342	14084	199 /501 /502	Alcohol, wine, red/white	13	1.6	0.7	0.7	3.3	FDA	2016-2020
210	14091	503	Beverage, almond	9	0.4	0.3	0.1	0.9	FDA/USDA[C]	2020-2022
211	14090	504	Beverage, coconut water	3	0.6	0.2	0.4	0.8	FDA	2018-2020
212	14060	505	Beverage, energy	3	0.1	0.2	0.0	0.4	FDA	2018-2020
213	16222	506	Beverage, soy, shelf stable	6	1.3	1.2	0.3	3	FDA/USDA[C]	2019-2022
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
445			Beverage, soy, shelf stable (with seaweed or seaweed derivative)	2	4.9		2.9	6.9	FDA/USDA[C]	2018,2022
264		507	Beverage, sports	3	0.0	0.0	0.0	0.0	FDA	2018-2020
374	14164		Beverage, chocolate malt powder, prepared with 1% milk, fortified	1	28				USDA	2014
108	14416	194	Carbonated beverage, cola, low-calorie	10	0.3	0.2	0.0	0.6	FDA	2016-2020
106	14148	191	Carbonated beverage, cola, regular	10	0.2	0.2	0.0	0.5	FDA	2016-2020

320	14144	306/ 508	Carbonated beverage, fruit-flavored	10	0.1	0.2	0.0	0.5	FDA	2016-2020
155	14209	305	Coffee, brewed from ground	10	0.1	0.1	0.0	0.3	FDA	2016-2020
13	14201	381	Coffee, decaffeinated, from ground	7	0.2	0.1	0.1	0.4	FDA	2016-2017
173	14242	351	Cranberry juice cocktail, canned/bottled	10	0.2	0.3	0.0	0.8	FDA	2016-2020
156	14651	307	Fruit drink (5% - 25% juice), canned/bottled	10	0.7	0.3	0.3	1.2	FDA	2016-2020
107	14541	193	Fruit drink from powder, reconstituted	10	0.1	0.2	0.0	0.5	FDA	2016-2020
68	09400	99	Juice, apple, bottled	10	0.4	0.6	0.0	1.9	FDA	2016-2020
172	09444	350	Juice, fruit blend (100% juice), canned/bottled	10	0.8	0.3	0.4	1.4	FDA	2016-2020
138	09130	257	Juice, grape, bottled	10	0.3	0.2	0.1	0.8	FDA	2016-2020
69	09123	100	Juice, grapefruit, bottle/carton	10	5.1	14.4	0.0	46	FDA	2016-2020
225	09152	524	Juice, lemon, bottled	3	1.5	1.6	0.0	3.2	FDA	2018-2020
174	09207	352	Juice, orange, bottle/carton	10	8.5	7.9	1.6	24	FDA	2016-2020
338	09209	98	Juice, orange, from frozen concentrate, reconstituted	7	0.4	0.2	0.2	0.7	FDA	2016-2017
137	09409	256	Juice, pineapple, canned	10	0.2	0.2	0.0	0.6	FDA	2016-2020
339	09294	103	Juice, prune, bottled	7	1.3	1.3	0.4	3.2	FDA	2016-2017
314	11886	261	Juice, tomato, bottled	7	1.1	0.3	0.7	1.4	FDA	2016-2017
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
226	11578	525	Juice, tomato-vegetable, bottled	3	0.8	0.5	0.4	1.3	FDA	2018-2020
310	14293	105	Lemonade, from frozen concentrate, reconstituted	7	0.1	0.1	0.0	0.2	FDA	2016-2017
322		331, 509	Meal replacement, liquid, ready to drink (RTD), assorted flavors	10	39	41	18	143	FDA	2016-2020
215	14066	510	Powder, protein	3	98	46	67	150	FDA	2018-2020
109	14355	197	Tea, brewed from tea bag	10	0.1	0.1	0.0	0.4	FDA	2016-2020
14	14352	382	Tea, decaffeinated, brewed from tea bag	7	0.1	0.1	0.0	0.2	FDA	2016-2017
184	14555	380	Water, mineral/spring, bottled	35	0.2	0.3	0.0	1.3	FDA	2016-2020

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
439	14411		Water, tap, drinking[2]	40	1.1	2.0	0.0	11	USDA	2003
Seafood										
389	15141		Crustaceans, crab, blue, canned	3	38	12	27	52	USDA	2008
500	(100330)		Crustaceans, crab, blue, lump, pasteurized	8	44	9	29	61	USDA[C]	2023
390	15148		Crustaceans, lobster, northern, cooked, moist heat	3	185	44	139	226	USDA	2008
391	15149 (100327)		Crustaceans, shrimp, mixed species, raw	17	14	11	4.1	39	USDA[c]	2008,2016, 2023
132	15151	244	Crustaceans, shrimp, precooked, shell removed, no tail	39	15	10	3.4	55	FDA/USDA	2008,2016-2020
33	15027	34	Fish sticks or patty, frozen, oven-cooked	14	67	28	25	134	FDA/USDA	2012-2013, 2016-2020
499	15234		Fish, catfish, farmed, raw	8	1.9	0.8	1.1	3.6	USDA[C]	2023
165	15235	339	Fish, catfish, pan-cooked with oil	35	3.2	2.5	0.0	8.1	FDA	2016-2020
498	(100328)		Fish, cod, Atlantic, wild, raw	8	114	116	23	361	USDA[C]	2023
186	15192	387	Fish, cod, baked	28	172	63	88	330	FDA	2017-2020
375	15019		Fish, cod, Pacific, raw	7	131	67	51	241	USDA	2007-2008
376	15028		Fish, flatfish (flounder and sole species), raw	4	14	3.9	11	20	USDA	2008
377	15033		Fish, haddock, raw	3	227	88	138	314	USDA	2008
378	15036		Fish, halibut, Atlantic and Pacific, raw	5	8.0	1.3	7.4	10	USDA	2003,2008
379	15057		Fish, ocean perch, Atlantic, raw	4	9.3	2.2	7.4	12	USDA	2008
396	15266		Fish, pollock, Alaska, raw	3	44	8.7	37	54	USDA	2008
380	15070		Fish, rockfish, Pacific, mixed species, raw	3	14	4.8	11	20	USDA	2008
496	15236		Fish, salmon, Atlantic, farmed, raw	8	3.2	1.3	1.5	5.6	USDA[C]	2023
421	35171		Fish, salmon, chum, dried (Alaska Native)	1	38				USDA	2004
395	15260		Fish, salmon, pink, canned, drained solids	2	14		7.4	21	USDA	2008,2010
381	15083		Fish, salmon, pink, raw	5	26	15.7	12	50	USDA	2007-2008

384	15087		Fish, salmon, sockeye, canned, drained solids	1	22				USDA	2010
382	15085		Fish, salmon, sockeye, raw	2	14		12	17	USDA	2008
495	(100324)		Fish, salmon, sockeye, wild, raw	8	18	1.7	16	21	USDA[c]	2023
158	15237	318	Fish, salmon, steaks/fillets, baked	35	13	7.1	0.0	29	FDA	2016-2020
422	35184		Fish, smelt, dried (Alaska Native)	1	216				USDA	2004
371			Fish, swai, cooked	2	7.4		7.4	7.4	USDA	2017
385	15110		Fish, swordfish, raw	4	19	3.8	16	25	USDA	2008
187	15262	388	Fish, tilapia, baked	28	6.9	15	0.0	81	FDA	2017-2020
497	(100326)		Fish, tilapia, farmed, raw	8	4.1	3.2	0.9	11	USDA[C]	2023
386	15115		Fish, trout, rainbow, wild, raw	1	7.4				USDA	2008
166	15121	340	Fish, tuna, canned in water, drained	15	8.7	1.8	6.6	12	FDA/USDA	2008,2012, 2016-2020
388	15118		Fish, tuna, fresh, bluefin, cooked, dry heat	4	23	4.4	18	28	USDA	2008
387	15117		Fish, tuna, fresh, bluefin, raw	4	18	5.9	12	26	USDA	2008
420	35091		Fish, whitefish, broad, including head, eyes, cheeks and soft bones (Alaska Native), raw	1	34				USDA	2005
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
392	15160		Mollusks, clam, mixed species, canned, drained solids	4	66	9.1	58	78	USDA	2007
393	15169		Mollusks, oyster, eastern, wild, cooked, moist heat	3	109	26	81	132	USDA	2008
394	15172		Mollusks, scallop, mixed species, raw	4	7.4	0.0	7.4	7.4	USDA	2008
Grains[3]										
16	20081	900	Flour, white, all-purpose	3	0.8	1.4	0.0	2.5	FDA	2018-2020
53	20110	69	Noodles, egg, enriched, boiled	10	3.7	1.2	1.7	5.4	FDA	2016-2020
347	20321		Pasta, enriched, boiled in water with iodized salt using amount per pasta label	4	22	6.6	13	28	USDA	2017
232	20134	539	Pasta, rice noodles, cooked	3	0.9	1.5	0.0	2.6	FDA	2018-2020
171	20121	347	Pasta, spaghetti, enriched, boiled	10	0.3	0.9	0.0	2.8	FDA	2016-2020

233	20125	540	Pasta, whole wheat, cooked	3	0.0	0.0	0.0	0.0	FDA	2018-2020
223	20137	522	Quinoa, cooked	3	0.0	0.0	0.0	0.0	FDA	2018-2020
200	20041	402	Rice, brown, cooked	28	0.0	0.0	0.0	0.0	FDA	2017-2020
40	20051	50	Rice, white, enriched, cooked	34	0.2	1.1	0.0	6.3	FDA	2016-2020
Cereals										
254		74	Cereal, bran with raisins	10	0.7	0.6	0.0	1.7	FDA	2016-2020
253		71	Cereal, corn flakes	10	0.2	0.4	0.0	1.2	FDA	2016-2020
43	08091	53	Cereal, corn/hominy grits, enriched, cooked	10	0.0	0.1	0.0	0.2	FDA	2016-2020
42	08169	52	Cereal, cream of wheat (farina), enriched, cooked	10	0.0	0.1	0.0	0.2	FDA	2016-2020
255		75	Cereal, crisped rice	10	0.3	0.3	0.0	0.8	FDA	2016-2020
306		72	Cereal, fruit-flavored, sweetened[4]	6	0.5	0.3	0.2	0.9	FDA	2016-2017
266		512	Cereal, granola	3	11	2.4	8.3	13	FDA	2018-2020
308		76	Cereal, granola with raisins	7	14	4.0	9.4	20	FDA	2016-2017
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
256		77	Cereal, oat ring	10	0.7	0.5	0.0	1.2	FDA	2016-2020
267		513	Cereal, oat ring, honey	3	0.0	0.0	0.0	0.0	FDA	2018-2020
41	08121	51	Cereal, oatmeal, plain, cooked	10	0.2	0.4	0.0	1.1	FDA	2016-2020
307		73	Cereal, shredded wheat	7	0.1	0.2	0.0	0.6	FDA	2016-2017
268		514	Cereal, shredded wheat, frosted	3	0.0	0.0	0.0	0.0	FDA	2018-2020
269		515	Cereal, whole wheat, cooked	3	0.0	0.0	0.0	0.0	FDA	2018-2020
Baked Products										
133	18001	249	Bagel, plain, toasted	35	0.6	1.7	0.0	9.3	FDA	2016-2020
305	18015	61	Biscuits, refrigerated-type, baked	8	2.5	1.6	0.7	5.6	FDA/USDA	2013,2016-2017
344	28397	248	Bread, multigrain[5]	4	1.8	2.0	0.0	4.4	FDA	2016-2017
337	18060	64	Bread, rye	7	0.6	0.3	0.0	0.9	FDA	2016-2017

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
199	18350	401	Bread, white roll/bun (hamburger/hotdog)[6]	16	2.4	3.3	0.0	10	FDA/USDA	2017-2020
442	18350*	401*	Bread, white roll/bun (hamburger/hotdog), with iodate dough conditioner	16	1060	342	480	1730	FDA/USDA	2017-2020
46	18069	58	Bread, white, enriched, pre-sliced[7]	15	1.8	2.7	0.0	9.5	FDA/USDA	2011,2013, 2016-2020
440	18069*	58*	Bread, white, enriched, pre-sliced, with iodate dough conditioner	19	592	198	350	1178	FDA/USDA	2013,2016-2020
48	18075	62	Bread, whole-wheat, commercially prepared[8]	21	1.9	2.5	0.0	9.5	FDA/USDA	2013,2016-2020
441	18075*	62*	Bread, whole-wheat, commercially prepared, with iodate dough conditioner	8	546	214	340	1010	FDA/USDA	2016,2018-2019
15	18079	903	Breadcrumbs	3	112	68	45	180	FDA	2018-2020
170	18362	345	Breakfast tart/toaster pastry[9]	9	2.3	2.2	0.0	5.4	FDA	2016-2020
146	18151	291	Brownie, commercially prepared	10	9.7	12	0.9	42	FDA	2016-2020
99	18096	178	Cake, chocolate with chocolate icing, commercially prepared[10]	34	8.1	3	3.1	17	FDA	2016-2020
263		369	Cake, white with white icing, commercially prepared[11]	33	13	15	2.7	72	FDA	2016-2020
399	18140		Cake, yellow with chocolate frosting, commercially prepared	3	7.4	0.0	7.4	7.4	USDA	2011
185	18964	386	Cinnamon roll, from package, iced	30	3.8	3.3	0.0	12	FDA	2017-2020
100	18160	183	Cookies, from package, chocolate chip	11	1.1	1.0	0.0	2.7	FDA/USDA	2012,2016-2020
101	18166	184	Cookies, from package, sandwich with crème filling	10	0.3	0.4	0.0	1.1	FDA	2016-2020
147	18204	292	Cookies, from package, sugar[12]	8	4.7	2.7	0.0	8.9	FDA	2016-2020
47	18024	60	Cornbread, homemade	10	27	12.2	12	49	FDA	2016-2020
398	18023		Cornbread, from dry mix, prepared with 2% milk, margarine, and eggs	1	17				USDA	2012

136	18229	252	Crackers, butter-type	10	0.3	0.4	0.0	1.1	FDA	2016-2020
229	18214	531	Crackers, cheese, regular	4	11	5.5	4.7	18	FDA/USDA	2009,2018-2020
135	18173	251	Crackers, graham	10	0.9	0.8	0.0	2.6	FDA	2016-2020
51	18228	66	Crackers, saltine	10	0.3	0.4	0.0	0.8	FDA	2016-2020
145	18248	290	Doughnut, cake-type, plain, commercially prepared	10	15	15	5.1	41	FDA	2016-2020
134	18437	250	English muffin, plain, toasted	35	1.1	2.8	0.0	15	FDA	2016-2020
50	18274	65	Muffin, blueberry, commercially prepared	35	12	4.8	5.3	35	FDA	2016-2020
169	18936	344	Pancakes, frozen, heated	12	6.7	1.7	3.2	10	FDA/USDA	2013,2016-2020
234	18335	541	Pie crust, commercially prepared	3	1.2	2.0	0.0	3.5	FDA	2018-2020
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
102	18443	185	Pie, apple, fresh/frozen, commercially prepared	10	0.4	0.5	0.0	1.2	FDA	2016-2020
103	18326	186	Pie, pumpkin, fresh/frozen, commercially prepared	10	22	3.4	17.5	30	FDA	2016-2020
3	18244	182	Sweet roll/Danish pastry	4	6.0	1.4	4.4	7.7	FDA	2016
198	18363	400	Tortilla, corn	28	0.3	0.9	0.0	3.6	FDA	2017-2020
49	18970	63	Tortilla, flour	34	0.4	1.4	0.0	7.5	FDA	2016-2020
Sweets and Snacks										
216	19919	511	Candy, fruit snacks	3	1.6	2.8	0.0	4.9	FDA	2018-2020
178	19155	371	Candy bar (chocolate, nougat, and nuts)	10	17	2.9	14	22	FDA	2016-2020
104	19120	187	Candy bar, milk chocolate, plain	10	46	5.9	35	54	FDA	2016-2020
148	19107	293	Candy, hard, assorted flavors	10	7.8	12.6	0.0	35	FDA	2016-2020
85	19411	138	Chips, potato	10	2.3	3.6	0.0	9.1	FDA	2016-2020
402	19412		Chips, potato, made from dried potatoes, cheese-flavor	1	1.5				USDA	2012
52	25028	67	Chips, corn/tortilla	10	1.8	1.6	0.1	4.5	FDA	2016-2020

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
105	19173	190	Gelatin dessert, assorted flavors, prepared	10	0.5	0.4	0.1	1.4	FDA	2016-2020
224	19015	523	Granola bar	3	1.9	1.6	0.0	3.0	FDA	2018-2020
327		370	Granola bar, with raisins	7	2.0	1.6	0.6	4.6	FDA	2016-2017
97	19296	172	Honey	10	0.7	0.4	0.3	1.7	FDA	2016-2020
151	19300	296	Jelly, assorted flavors	10	1.0	0.6	0.2	2.1	FDA	2016-2020
144	19283	288	Popsicle, fruit-flavored[13]	3	1.1	1.2	0.3	2.5	FDA	2016-2020
179	25026	372	Popcorn, microwave, butter-flavored	10	0.4	0.8	0.0	2.5	FDA	2016-2020
149	19047	294	Pretzels, hard, salted	10	0.5	0.4	0.0	1.2	FDA	2016-2020
235	19183	542	Pudding, ready-to-eat, chocolate	3	14	1.2	13	15	FDA	2018-2020
326		368	Pudding, ready-to-eat, assorted flavors other than chocolate	7	4.7	1.9	3.0	7.6	FDA	2016-2017
401	19193		Pudding, rice, ready-to-eat	1	28				USDA	2012
289	19097	287	Sherbet, fruit-flavored[14]	3	14	0.7	14	15	FDA	2016
330		385	Sorbet, fruit-flavored	6	0.8	0.6	0.0	1.8	FDA	2017-2020
95	19335	169	Sugar, white, granulated	10	0.0	0.1	0.0	0.3	FDA	2016-2020
150	19348	295	Syrup, chocolate	10	0.7	0.6	0.3	2.0	FDA	2016-2020
96	19129	170	Syrup, pancake	10	0.2	0.1	0.0	0.4	FDA	2016-2020
Mixed Dishes										
284		269	Beef stroganoff with noodles, homemade	7	6.2	1.0	5.3	8.1	FDA	2016-2017
88	22906	152	Chicken potpie, frozen, heated	10	3.6	2.1	1.9	9.0	FDA	2016-2020
86	22904	145	Chili con carne with beans, canned	10	1.7	1.0	0.0	2.8	FDA	2016-2020
294	21127	355	Coleslaw, mayonnaise-type, from grocery/deli	7	1.8	0.8	1.0	2.8	FDA	2016-2017
411	22973		Corn dogs, frozen, prepared	1	24				USDA	2011
6	22977	361	Lasagna with meat, frozen, heated	7	8.4	1.1	7.0	9.8	FDA	2016-2017
418	32019		Lasagna, cheese, frozen, unprepared	5	11	3.4	7.4	15	USDA	2012-2013

87	22960	146	Macaroni and cheese, prepared from box mix	17	19	4.5	11	29	FDA/USDA	2012,2016-2020
291		346	Macaroni salad, from grocery/deli	7	3.2	1.2	1.9	5.3	FDA	2016-2017
245		148	Meatloaf, beef, homemade	7	16	11	8.1	34	FDA	2016-2017
416	32008		Pasta mix, classic cheeseburger macaroni, unprepared	1	7.4				USDA	2013
417	32010		Pasta mix, Italian lasagna, unprepared	2	11		7.4	15	USDA	2013
409	21505		Pizza, cheese topping, thin crust, frozen, baked	7	23	5.0	16	29	USDA	2017
410	22971		Potato salad with egg	5	1.5	0.0	1.5	1.5	USDA	2010,2017
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
292	21140	353	Potato salad, mayonnaise-type, from grocery/deli	7	2.6	1.7	0.0	5.0	FDA	2016-2017
244		142	Spaghetti with meat sauce, homemade	7	1.8	0.6	1.0	2.6	FDA	2016-2017
438			Sushi, California roll	3	31	9.5	20	37	USDA	2009
415	32007		Taquitos, frozen, beef and cheese, oven-heated	1	7.4				USDA	2012
414	32006		Taquitos, frozen, chicken and cheese, oven-heated	1	7.4				USDA	2012
285		272	Tuna noodle casserole, homemade	7	16	9.3	11	36	FDA	2016-2017
419	32037		Turnover, pepperoni pizza	1	21				USDA	2017
Fast Foods										
197	21142	399	Biscuits, fast food	32	9.1	2.5	6.0	17	FDA/USDA	2017-2020
10	21064	365	Burrito with beef, beans and cheese, from Mexican carry-out	7	5.4	2.2	2.7	9.8	FDA	2016-2017
162	21469	336	Chicken breast, fried, with skin, fast food[15]	33	3.8	2.1	0.0	10	FDA	2016-2020
164	21470	338	Chicken leg, fried, with skin, fast food	35	2.3	1.7	0.0	7.7	FDA	2016-2020
131	21229	241	Chicken nuggets, fast food	35	0.9	1.6	0.0	7.3	FDA	2016-2020
303	01110	7	Milk shake, chocolate, fast food	7	35	9.4	23	45	FDA	2016-2017
193	01111	394	Milk shake, vanilla, fast food	28	36	5.8	22	47	FDA	2017-2020

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
318	21302	281	Pizza, cheese and pepperoni, regular crust, from pizza carry-out	11	12	4.4	7.1	20	FDA/USDA	2010,2016-2017
202	21299	404	Pizza, cheese, fast food	30	12	2.9	5.7	17	FDA/USDA	2010,2017-2020
435			Pizza, crust only, fast food	9	1.5	0.0	1.5	1.5	USDA	2017
408	21484		Pizza, with sausage topping, regular crust, fast food	1	13				USDA	2010
139	21138	258	Potatoes, French fries, fast food	35	1.1	2.1	0.0	10	FDA	2016-2020
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
2	21112	147	Sandwich, hamburger, single, large patty, fast food	7	3.3	1.4	2.0	5.9	FDA	2016-2017
406	21092		Sandwich, cheeseburger, double, regular patty, plain, fast food	8	11	2.7	7.4	15	USDA	2017
443	21092*		Sandwich, cheeseburger, double, regular patty, fast food (bun w iodate dough conditioner)	4	279	96	164	392	USDA	2017
286	21096	275	Sandwich, cheeseburger, single, large patty, fast food	9	10	2.2	7.4	15	FDA/USDA	2013,2016-2017
11	21490	366	Sandwich, chicken filet (broiled) sandwich, fast food	7	1.8	1.6	0.4	4.5	FDA	2016-2017
288	21021	278	Sandwich, egg, cheese, and ham on English muffin, fast food	8	24	5.9	16	32	FDA/USDA	2012,2016-2017
287	21105	276	Sandwich, fish, fast food	10	36	12	23	60	FDA/USDA	2013,2016-2017
405	21059		Shrimp, breaded and fried, fast food	2	7.4		7.4	7.4	USDA	2010
4	21486	279	Taco/tostada with beef and cheese, from Mexican carry-out	7	7.0	2.7	4.4	12	FDA	2016-2017
Restaurant Foods (excluding Fast Food Restaurants)										
7	36603	362	Beef with vegetables in sauce, restaurant, Chinese	7	4.3	5.2	0.6	16	FDA	2016-2017
428	36050		Cheese enchilada, restaurant, Mexican	1	16				USDA	2013

DB_ID	Standard Reference (Foundation Foods[A]) FDC NDB No.	TDS No.	Description	n	Iodine mcg/100g[B]	SD	Min	Max	Source(s)	Year(s)
429	36052		Cheese quesadilla, restaurant, Mexican	1	23				USDA	2013
430	36055		Cheese ravioli with marinara sauce, restaurant, Italian	1	22				USDA	2013
8	36626	363	Chicken with vegetables in sauce, restaurant, Chinese	7	3.8	4.6	0.8	13	FDA	2016-2017
444	36033		Fish fillet, parmesan crusted tilapia, restaurant, family style	1	13				USDA	2013
436			Fish, salmon, grilled, restaurant	1	7.4				USDA	2017
423	36012		Fried mozzarella sticks, restaurant, family style	3	38	4.1	34	42	USDA	2013
9	36602	364	Fried rice, meatless, restaurant, Chinese	7	5.5	5.6	1.2	17	FDA	2016-2017
427	36041		Lasagna with meat, restaurant, Italian	1	28				USDA	2013
425	36017		Macaroni & cheese, from kids' menu, restaurant, family style	10	22	7.4	13	32	USDA	2013,2017
431	36620		Shrimp and vegetables, restaurant, Chinese	1	1.5				USDA	2009
Sausage and Luncheon Meats										
32	07959	29	Bologna (beef/pork)	10	25	9.7	13	44	FDA	2016-2020
31	07949	28	Frankfurter, beef/pork, boiled[16]	28	8.8	12	0.0	60	FDA	2016-2020
369	07945		Frankfurter, beef, heated	2	7.4		7.4	7.4	USDA	2010
261	07081	335 /543	Luncheon meat (chicken/turkey)	10	3.5	1.7	0.0	5.4	FDA	2016-2020
129	07028	239	Luncheon meat, ham	10	1.2	0.9	0.0	3.0	FDA	2016-2020
188	07072	389	Salami, dry/hard	31	10	9.4	2.5	48	FDA/USDA	2011,2017-2020
243		30	Salami, luncheon-meat type (not hard)	7	12	8.0	3.5	23	FDA	2016-2017
367	07019		Sausage, pork, chorizo, raw	1	30				USDA	2017
28	07953	19	Sausage, pork, oven-cooked	35	4.2	2.9	0.0	11	FDA	2016-2020
Meats										
130	05064	240	Chicken breast, oven-roasted (skin removed)	35	1.2	1.9	0.0	8.1	FDA	2016-2020

163	05098	337	Chicken thigh, oven-roasted (skin removed)	35	0.9	1.8	0.0	9.5	FDA	2016-2020
30	05192	26	Turkey breast, oven-roasted	35	4.8	13.2	0.0	61	FDA	2016-2020
189	05306	390	Turkey, ground, pan-cooked	28	3.9	4.6	0.0	17	FDA	2017-2020
26	10136	17	Ham, cured (not canned), baked	35	0.7	1.4	0.0	5.9	FDA	2016-2020
29	10860	20	Pork bacon, oven-cooked	35	1.1	1.7	0.0	7.7	FDA	2016-2020
DB_ID	**Standard Reference (Foundation Foods[A]) FDC NDB No.**	**TDS No.**	**Description**	**n**	**Iodine mcg/100g[B]**	**SD**	**Min**	**Max**	**Source(s)**	**Year(s)**
27	10179	18	Pork chop, pan-cooked with oil	35	0.5	1.3	0.0	6.8	FDA	2016-2020
333		21	Pork roast, loin, oven-roasted	7	0.4	0.3	0.0	0.9	FDA	2016-2017
335	17204	27	Beef/calf, liver, pan-cooked with oil	7	16	5.0	7.7	22	FDA	2016-2017
251		13	Beef, ground, pan-cooked	35	7.5	3.0	3.3	19	FDA	2016-2020
334		14	Beef roast, chuck, oven-roasted	8	3.8	2.2	1.8	8.2	FDA	2016-2017
260		334	Beef steak, loin/sirloin, broiled	34	4.7	1.7	0.0	8.4	FDA	2016-2020
252		22	Lamb chop, pan-cooked with oil	35	2.5	2.7	0.0	12	FDA	2016-2020

[*]TDS and/or NDB identifiers with asterisks indicate products that differ from the generic product in that they contain iodate dough conditioners

[A]A six-digit code is used for Foundation Foods in parentheses to distinguish items from Standard Reference legacy

[B]Measurements below the LOD or RL are displayed as zero (0), with trace values between the LOD and LOQ reported as the detected iodine concentrations

[C]Dataset includes samples analyzed by the FDA's Center for Food Safety and Applied Nutrition laboratory in College Park, Maryland

[1]Omitted sample with value of 64 mcg I/100g as an outlier

[2]USDA water samples analyzed by FDA

[3]Grain products prepared without salt unless otherwise noted

[4]Omitted sample with 386 mcg I/100g – value probably from FD&C Red No. 3 food coloring

[5]Omitted 3 samples with values from 72 – 224 mcg I/100g – probably mixture of breads with and without iodate dough conditioners

[6]Omitted 6 samples with values from 130 – 416 mcg I/100g – probably mixture of breads with and without iodate dough conditioners

[7]Omitted 11 samples with values from 38 – 310 mcg I/100g – probably mixture of breads with and without iodate dough conditioners

[8]Omitted 10 samples with values from 110 – 290 mcg I/100g – probably mixture of breads with and without iodate dough conditioners

[9]Omitted sample with 92.4 mcg I/100g – value probably from FD&C Red No. 3 food coloring

[10]Omitted sample with 120 mcg I/100g – value probably from FD&C Red No. 3 food coloring

[11]Omitted 3 samples with 310 and 335 mcg I/100g – values probably from FD&C Red No. 3 food coloring

[12]Omitted 2 samples with 42 and 973 mcg I/100g – values probably from FD&C Red No. 3 food coloring

[13]Omitted 9 samples from 150 to 621 mcg I/100g – values probably from FD&C Red No. 3 food coloring

[14]Omitted sample with 545 mcg I/100g – value probably from FD&C Red No. 3 food coloring
[15]Omitted samples with values of 38 and 42 mcg I/100g – values may reflect the use of disinfectant during poultry cleaning, but we were unable to confirm this use
[16]Omitted sample with value of 1000 mcg I/100g as an outlier, although value was confirmed by the lab