



Guiding Stars®
Nutritious choices made simple™

Guidance on Understanding the Science

The Guiding Stars® nutrition guidance program is based on national and international dietary recommendations and aligns with Canadian regulations as established by Health Canada (i.e. Canada's Food Guide) and implemented by the Canadian Food Inspection Agency (CFIA), as well as the 2010 Dietary Guidelines for Americans (DGA). The Guiding Stars® program evaluates the nutrient content of foods using nutrition data gleaned from the Nutrition Facts table and the ingredient list on product packaging. For products that do not have food labels such as fresh produce and meats, nutrition data is obtained from the Canadian Nutrient File (CNF) database. Moreover, CNF data is used for foods that contain only a single ingredient or a single ingredient plus water in order to generate consistent ratings for such products. Prior to evaluation, all foods are standardized to a 100 kilocalorie (kcal) serving size. This standardization allows the consumer to compare products side by side and adjusts for serving size variation of the same product due to food packaging, as well as water weight. Four (4) separate algorithms are used to generate the Stars® ratings – 1) general foods and beverages, 2) meats/poultry/seafood/dairy/nuts, 3) fats and oils, and 4) infant and toddler foods.

To be consistent with Health Canada's food labeling policy, nutrients are only included in the Guiding Stars® algorithm if a significant scientific consensus regarding health promotion and/or an association with reduced risk of chronic disease has been documented, and when recommendations or authoritative statements have been established by a key scientific body. Although many nutrients and food constituents were considered, the rationale for exclusion from the Guiding Stars® program was a lack of consensus-based science, lack of a dietary recommendation, or feasibility issues. For example, the polyphenol content of foods is not possible to include as these data are not available for all edible products, nor are there established dietary intake recommendations. The Guiding Stars® algorithm includes as nutrients to encourage, vitamins/minerals, fibre, whole grains, omega-3 fatty acids, and as nutrients to limit, *trans* and saturated fatty acids, added sodium, and added sugars. Note that cholesterol is not included as a nutrient to limit in Canada (whereas it is in the U.S. version of Guiding Stars). A pivotal 1990 Canadian report entitled "Nutrition recommendations: the report of the scientific review committee" (cited to this day) did not specify an upper limit for dietary cholesterol and that has not changed. As such, Canada does not enforce a dietary recommendation for cholesterol and the presence of the %DV in the Nutrition Facts table is optional. Thus an algorithm that includes debits for cholesterol would be inconsistent among food products and would not align with Canadian regulations.

Minimum and maximum threshold values were established for each nutrient included in the Guiding Stars® algorithm based on the Daily Values or using established dietary guidance from authoritative scientific bodies. In order to not penalize foods which naturally contain sugars or sodium (such as milk and spinach, respectively), debit for added sugars and added sodium content is triggered by the presence of specific added sugars and sodium keywords identified in the ingredient statement.

The Guiding Stars® program is a point based system. The program awards credit points to products for nutrient to encourage and assigns debit points for nutrients to limit. The net score of a product is then translated into a Guiding Stars® rating of 0, 1, 2, or 3. Only foods with a score above 0, indicating that the positive nutrient contribution outweighs the negative nutrient contribution, receive stars. For example, a food containing a moderate amount of sodium could still earn stars as long as the positive points from the vitamin/mineral, omega-3 fatty acid and/or fibre content outweigh the sodium debit.

A manuscript which includes the Guiding Stars® algorithms has been peer reviewed and accepted for publication in the American Journal of Health Promotion. Following is a general summary of the positive and negative nutrient attributes included in the Guiding Stars® algorithms. The tables contain the core elements of the algorithm at their base levels standardized to 100 calories. (Please note that meeting these base levels would result in a 3-Star® rating. Products that meet some but not all of these criteria might still rate 1 or 2 Stars® if the positive attributes outweigh the negative attributes.) More details on the algorithms will be released with the forthcoming journal publication at the end of 2011. Finally, note that while the Guiding Stars® concept and approach is firm, the algorithm details are subject to flux as dietary guidelines change and recommendations are refined. The Guiding Stars® Scientific Advisory Panel reviews the algorithm on a regular basis and makes changes as needed.

General Foods and Beverages:

Per 100 kcal – each product or recipe must have:		
Positive Attributes	Vitamins and Minerals	Greater than or equal to 10% of the daily value of two vitamins or minerals. There are numerous vitamins and minerals beyond the 4 required by law (Vitamins A and C, Calcium and Iron) that could be included on the food label to increase a products star potential. Please note that points for vitamins & minerals are capped. Fortified products are not guaranteed to earn Stars®.
	Omega-3 Fatty Acids	Greater than or equal to 0.81 grams total omega-3 fatty acids
	EPA & DHA bonus	Greater than or equal to 12.5 mg EPA, DHA, or both
	Dietary Fibre	Greater than or equal to 3.75 grams of dietary fibre
	Whole Grains bonus	Greater than or equal to 1.5 grams of dietary fibre, <i>plus</i> the presence of a whole grain key word in the ingredient list
Negative Attributes	Trans and Saturated Fat*	Less than or equal to 1 gram
	Added Sugar	No added sugar. Added sugars include different names for sugar or sweeteners including 'natural' sugars such as honey and molasses and sugar alcohols. Non-caloric sweeteners are not debited.
	Added Sodium	Less than or equal to 120 mg of added sodium.

*Any food with “hydrogenated” in the ingredients statement receives a 1 point debit if the trans fat content is >0.2 g.

As noted above, Guiding Stars® recognizes that there are different types of foods with inherently different nutrient profiles. In addition to the General Foods and Beverages algorithm described above, there are three (3) other algorithm variations to address these inherent differences.

Meats/Seafood/Dairy and Nuts: Meats and seafood have intrinsically higher levels of certain nutrients such as cholesterol and saturated fat, and do not contain fibre and whole grains. Nuts likewise naturally contain higher levels of saturated fat, but do contain naturally occurring fibre. Canada’s Food Guide currently categorizes nuts with meat items.

Meats/Seafood/Dairy and Nuts:

Per 100 kcal – each product or recipe must have:		
Positive Attributes	Vitamins and Minerals	Greater than or equal to 10% of the daily value of two vitamins or minerals, or, greater than or equal to 20% of the daily value of one vitamin or mineral. Please note that points for vitamins and minerals are capped. Fortified products are not guaranteed to earn Stars®.
	Omega-3 Fatty Acids	Greater than or equal to 0.81 grams total omega-3 fatty acids
	EPA & DHA bonus	Greater than or equal to 12.5 mg EPA, DHA, or both
	Dietary Fibre bonus	Greater than or equal to 1.25 grams of dietary fibre. Dietary fibre is treated as a bonus here since the majority of foods in these categories do not naturally contain fibre.
Negative Attributes	Trans and Saturated Fat*	Less than or equal to 1.5 grams
	Added Sugar	No added sugar. Added sugars include different names for sugar or sweeteners including 'natural' sugars such as honey and molasses and sugar alcohols. Non-caloric sweeteners are not debited.
	Added Sodium	Less than or equal to 120 mg of added sodium

*Any food with “hydrogenated” in the ingredients statement receives a debit if the trans fat content is >0.2 g.

Fats and Oils: This model was created because the other models do not include nutrients such monounsaturated fat that must be considered to differentiate fats and oils in a nutritionally meaningful way. Guiding Stars® rating for fats and oils are based on data from Canadian Nutrient File database. Health Canada recommends that fat intake be between 20% and 35% of total calories.

Fats and Oils:

Per 100 kcal – each product or recipe must have:		
Positive Attributes	Monounsaturated fat	Greater than or equal to 6.7 grams
	Omega-3 fatty acids	Greater than or equal to 0.81 grams
	EPA & DHA bonus	Greater than or equal to 12.5 mg EPA, DHA, or both
Negative Attributes	Trans and Saturated Fat*	Less than or equal to 1.7 grams
	Added Sugar	No added sugar. Added sugars include different names for sugar or sweeteners including 'natural' sugars such as honey and molasses and sugar alcohols. Non-caloric sweeteners are not debited.
	Added Sodium	Less than or equal to 120 mg of added sodium.

*Any food with “hydrogenated” in the ingredients statement receives a debit if the trans fat content is >0.2 g.

Infants and Toddler Foods: Infants, less than 12 months old, and toddlers, between 12 and 24 months old, have unique nutritional needs. In this model, an emphasis has been placed on the shortfall nutrients for this age group (Vitamin A, Vitamin C, calcium, iron, and zinc) consistent with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). While Dietary Reference Intakes do exist for other vitamins and minerals for infants and toddlers, the algorithm is based on these primary nutrients as identified to be of paramount importance to this life stage group. For infants and toddlers, there are no recommendations for saturated fat, cholesterol, or *trans* fat.

This model is consistent with Models 1-3 in that it uses a 100-kcal standardization. Please note however that this model references a 1000 kcal diet as its base per the American Academy of Pediatrics’ recommendations for toddlers. Many elements included in Models 1-3 are not reiterated in this model as there is not an emphasis on increasing or restricting these nutrients (i.e. fibre, *trans* fat) until individuals are over 2 years old. Baby formula is not rated by the Guiding Stars® program.

Infants and Toddler Foods:

Per 100 kcal – each product or recipe must have:		
Positive Attributes	Vitamins and Minerals	Greater than or equal to 10% of the daily value of two vitamins or minerals, or, greater than or equal to 20% of the daily value of one vitamin or mineral. The only nutrients considered for this credit include Vitamins A and C, Calcium, Iron and Zinc.
Negative Attributes	Added Sugar	No added sugar. Added sugars include different names for sugar or sweeteners including 'natural' sugars such as honey and molasses and sugar alcohols. Non-caloric sweeteners are not debited.
	Added Sodium	Less than or equal to 100 mg of added sodium