Recommendations

Recommend that breastfeeding women:

- Follow Eating Well with Canada’s Food Guide and include an extra 2 to 3 Food Guide Servings from any food group(s) every day. Women who are underweight, nursing multiple infants or exercising vigorously may need additional food.
- Drink to thirst to meet the increased fluid needs during breastfeeding. The average adequate intake is about 12 cups of fluid (3.1 L) every day.
- Take a daily multivitamin and mineral supplement containing 0.4 mg (400 micrograms) of folic acid and 400 international units of vitamin D. It is recommended that the multivitamin/mineral supplement contain vitamin B₁₂.
- Consume at least 2 Food Guide Servings per week of fatty fish that are low in mercury (one Food Guide Serving is 75 g or 2 ½ oz).
- Follow Health Canada’s guidance advice on limiting high mercury fish. High mercury fish include fresh or frozen tuna, shark, swordfish, escolar, marlin, and orange roughy.
- Attain a healthy BMI. If needed, gradually lose weight through appropriate nutrition and physical activity once breastfeeding is established, to promote a return to pre-pregnancy weight and/or a healthy body mass index (BMI).
- Consider avoiding alcohol as it is transferred into the breastmilk; however, if choosing to have an occasional alcoholic drink, wait until the alcohol has cleared breastmilk (approximately 2-3 hours per standard drink) before breastfeeding.
- Consider all sources of caffeine and limit caffeine intake to 300 mg per day.
- Review the ingredient list, directions for use, and warnings or cautions provided on the product label of any herbal and natural health products, including herbal teas. Only consume herbal products that are considered safe for breastfeeding women.
- Consider that no special diet is recommended during lactation to prevent an allergy in an infant.
- Consider that modifying the maternal diet to reduce or eliminate infant colic or gas is not normally effective or recommended. A trial elimination of suspected foods one at a time can be tried. Foods found to have no effect on infant colic or gas can be re-introduced into the diet.

Referral recommendations:

- If the breastfeeding mother is concerned about breastmilk production and additional support is needed, refer the mother to a healthcare provider who is knowledgeable about breastfeeding (ex. public health nurse, breastfeeding clinic, lactation consultant, etc.).
- Consider referring breastfeeding women to a Registered Dietitian for nutrition counselling in circumstances that could affect nutritional status, such as: restriction of a whole Food Group on Canada’s Food Guide; <18 years of age; following a vegan diet; underweight; feeding multiple infants or an infant and young child; exercising vigorously; or when consuming a low calorie diet (<1500 kcal/day). Referral processes will vary based on zone and site policy.
Scope of this Guideline

The scope of this guideline covers the following:

- healthy mothers of healthy, full term infants
- women who are breastfeeding infant(s)/children of any age
- all ages of breastfeeding mothers, including adolescents

The scope of this guideline does not cover:

- preterm infants (which is defined as <37 weeks 0 days gestation)\(^1\)
- infants or mothers with specific health conditions (e.g. diabetes)

Background

Alberta Health Services is committed to the protection, promotion, and support for breastfeeding. Breastfeeding is the normal and unequalled method of feeding infants.\(^2\) Exclusive breastfeeding for the first 6 months, and continued for up to 2 years or longer, is recommended for the healthy growth and development of infants and toddlers\(^2\) and the benefits to mothers.\(^3\) Information on the benefits of breastfeeding can be found by taking the online course entitled “Breastfeeding Foundations”, available on My Learning Link (AHS staff) or the website: http://aphp.dapasoft.com.

Education to healthcare providers on breastfeeding has been shown to improve breastfeeding exclusivity and duration.\(^4\) As a strategy to support and encourage breastfeeding, this guideline provides healthcare providers with evidence-informed information in order to provide accurate and consistent information on maternal diet while breastfeeding, and helps address common maternal diet-related questions. The focus of this information is to help mothers achieve a nutritionally adequate diet to support the increased nutrient requirements of lactation in order to optimize the health benefits to herself and her infant.

Key Questions

Do breastfeeding women need more energy and nutrients than non-breastfeeding women? If so, how can breastfeeding women meet these needs?

Yes, breastfeeding women have higher energy, protein and carbohydrate needs and some increased nutrient needs such as: vitamin A, vitamin C, vitamin E, B vitamins and zinc, than non-breastfeeding women.\(^5,6,7\) However, breastfeeding women need less iron than non-breastfeeding women due to the absence of menstruation.\(^8\) When breastfeeding women resume menstruation, their iron needs increase.\(^6\) However, some breastfeeding women may need higher amounts of iron based on individual assessment (e.g. anemia).\(^9\)

The additional energy requirements needed for lactation are 350-400 calories/day during the first year.\(^5,9,10,11\) Refer to “What are the recommendations for weight loss for breastfeeding women?” for more information.
To meet these increased energy and nutrient needs, advise breastfeeding women to:

- Follow Eating Well with Canada’s Food Guide and include an extra 2 to 3 Food Guide Servings from any food group(s)
  - Practical examples of 3 Food Guide Servings that are 350-400 calories that may be eaten as snacks or added to meals are:
    - ¾ cup (30 g) whole grain cold cereal with 1 cup (250 mL) 1% milk, and a medium pear, or
    - 1 small pita with 1.5 oz (50 g) of cheese, 75 g of chicken, or
    - 1 small apple, ¼ cup (60 mL) of almonds and ¾ cup (175 mL) of yogurt

- Take a daily multivitamin/mineral supplement containing 400 micrograms (0.4 mg) of folic acid\(^\text{12}\) and 400 international units of vitamin D based on Alberta Health Services Calcium and Vitamin D Nutrition Guideline. It is recommended that the multivitamin/mineral supplement contain vitamin B\(_{12}\), as high doses of folic acid can mask a vitamin B\(_{12}\) deficiency.\(^\text{12}\) Health Canada only specifies that vitamin B\(_{12}\) should be present in the supplement and does not specify an amount of vitamin B\(_{12}\).\(^\text{12}\)

Prenatal multivitamin/mineral supplements are often also marketed as postnatal supplements. Although prenatal/postnatal-specific multivitamin/mineral supplements are not necessary after delivery, finishing a breastfeeding woman’s prenatal supplement is acceptable for practical reasons. These supplements typically have a higher iron and folic acid content than regular multivitamin/mineral supplements to meet the increased needs in pregnancy. Since breastfeeding women have lower iron requirements than in pregnancy, they can take any multivitamin/mineral supplement containing 400 micrograms (0.4 mg) of folic acid, 400 IU vitamin D, and vitamin B\(_{12}\). If women were taking a specialized/prescription supplement during pregnancy, it is recommended they check with their physician for advice on continuing.

Breastfeeding women can be offered a referral to a Registered Dietitian for nutrition counselling in circumstances that could impact her nutritional status, such as:

- restriction of a whole food group (e.g. Vegetables and Fruit, Grain Products, Milk and Alternatives, or Meat and Alternatives; cow’s milk protein-free diet)
- underweight
- exercising vigorously
- consuming a low calorie diet (<1500 kcal/day)
- <18 years of age
- following a vegan diet
- pregnant or breastfeeding multiple children

**Do breastfeeding women need to drink more fluid than non-breastfeeding women?**

Yes, breastfeeding women need to drink more fluid than non-breastfeeding women. The average adequate intake is about 12 cups (3.1 L) of fluid a day, which is higher than non-breastfeeding women (9 cups [2.2 L]/day).\(^\text{13}\) This includes all beverages such as water, milk, juice, coffee, tea, etc. It is recommended that breastfeeding women drink to thirst to meet their increased fluid needs and pay attention to early signs of insufficient fluid intake (e.g. dark-coloured urine).\(^\text{14}\) Even though low fluid intake has not been shown to impact breastmilk production, it could still cause mild maternal dehydration and associated maternal consequences (e.g. constipation).\(^\text{15}\) Additional fluids may be needed in hot weather and during exercise.\(^\text{13}\)

See also: Do extra fluids increase breastmilk production?
What are the nutritional needs of a breastfeeding woman who is also pregnant or feeding multiple children?

Due to limited research, specific nutrition recommendations for breastfeeding women who are also pregnant cannot be made.\textsuperscript{16} The nutritional needs of pregnant breastfeeding women are expected to increase energy and nutrient needs beyond those of breastfeeding or pregnant women alone.\textsuperscript{16} It is important for the pregnant breastfeeding woman to gain the recommended amount of weight during pregnancy according to her pre-pregnancy body mass index (BMI). See Nutrition Guideline Pregnancy.

There is currently not enough evidence to provide specific recommendations for breastfeeding mothers who are feeding multiple children. A recent Canadian expert consensus statement recommends “additional calories” for women who are underweight, feeding multiple infants, or exercising vigorously\textsuperscript{9} in addition to the extra 2 to 3 Food Guide Servings per day.

Consider referring breastfeeding women who are pregnant or are feeding multiple children to a Registered Dietitian for nutrition counselling.

Are there any extra considerations for adolescents (age <18 years) who are breastfeeding?

Adolescents may have higher energy requirements for their own growth, in addition to energy needed to support lactation. When considering additional nutrient needs, breastfeeding adolescents also need extra calcium (1300 mg calcium/day for non-breastfeeding and breastfeeding adolescents compared to 1000 mg/day for adult females.)\textsuperscript{17} Adolescents can meet their energy and nutrient needs for breastfeeding by following Canada’s Food Guide for their age and including the extra 2 to 3 Food Guide Servings from any food group(s) per day. To help meet their calcium requirement, healthcare providers can emphasize that adolescent females are recommended to have 3 to 4 Food Guide Servings of Milk and Alternatives per day (versus 2 Food Guide Servings for adult females).\textsuperscript{16} Adolescents also need to take a multivitamin/mineral supplement with the same nutrients advised for all breastfeeding women (0.4 mg of folic acid, vitamin B\textsubscript{12}, and 400 units of vitamin D).

Do breastfeeding mothers need nutrition supplement drinks?

Some nutrition supplement drinks are marketed specifically for pregnant and breastfeeding women.\textsuperscript{19} These drinks are not required for a healthy diet and are not intended as a total diet replacement as they are missing essential nutrients such as fibre.\textsuperscript{19} A nutrition supplement drink may not provide enough important nutrients like folic acid and vitamin D\textsuperscript{19}; therefore, it is not recommended as a multivitamin/mineral supplement replacement for breastfeeding women. If a woman is using this product, she is advised to follow the directions for use on the label\textsuperscript{15} unless otherwise advised by a physician or dietitian. Drinking more than the recommended amount may put women at risk of exceeding upper nutrient limits (e.g. vitamin A) when considering all oral sources of nutrients (food, drinks, and supplements).
Nutrition Guideline
Nutrition for the Breastfeeding Mother
Applicable to: Nurses, Physicians and Other Health Professionals

For Professional Reference Only

Does maternal diet affect the quality and/or composition of breastmilk?

Research in the area of breastmilk composition is limited by the wide variation in study designs and because of the number of studies of low to moderate quality. Overall, the literature suggests that the nutritional quality of breastmilk is highly preserved and day-to-day variations in diet do not affect breastmilk production and composition of nutrients. The nutritional composition of breastmilk is mainly affected by the mother's nutrient stores.

Refer to the questions below for the effects of these maternal diet components on breastmilk production, quality and composition:

- flavour
- weight loss and calories
- fasting
- protein, carbohydrate and fat
- omega-3 fatty acids (e.g. docosahexaenoic acid or DHA)
- fluids
- vitamins and minerals
- iron-deficiency anemia

Does a breastfeeding woman’s diet affect the flavour of breastmilk?

Yes, a breastfeeding woman’s diet can affect the flavour of breastmilk. The variety of flavours found in breastmilk is generally found to be beneficial to an infant’s development of food preferences; however, there is not enough evidence to suggest that certain flavours adversely affect the acceptability of breastmilk to the infant.

Flavour exposure starts in utero when an infant swallows amniotic fluid. Flavour exposure continues when components of a mother’s diet pass through her breastmilk. The extent of what is passed to an infant is highly variable between and within each individual mother. Research shows that early exposure of different flavours to infants via breastmilk may improve their acceptance to these flavours later on in life when exposed to the same flavour in complementary feeding.

What are the recommendations for weight loss for breastfeeding women?

Not all breastfeeding women may need to lose weight if they are at or below a healthy body weight. Additional energy demands for exclusively breastfeeding women compared to non-breastfeeding women are about 640 calories/day during the first 6 months; however, it is assumed that breastfeeding women draw on fat stores from pregnancy to help support milk production. Therefore, the energy requirements needed for lactation are only an additional 350-400 calories/day during the first year, which are likely to promote gradual weight loss. Gradual weight loss can be defined as the average rate of weight loss postpartum, which is 0.5 - 1.0 kg (1.1 - 2.2 pounds) per month after the first month postpartum.

For women who exceeded gestational weight gain targets or who were overweight or obese before pregnancy, it is recommended they return to pre-pregnancy weight and/or a healthy body mass index (BMI) through a combination of healthy eating and physical activity. For individualized dietary counselling, a referral can be made to a Registered Dietitian. Overweight (BMI ≥ 25) women can safely lose weight at a rate of 0.5 kg/week (2.0 kg/month or 4.4 pounds/month) without affecting breastmilk production.

See also: Do breastfeeding women need more energy and nutrients than non-breastfeeding women?
What is the effect of low-calorie intake and weight loss on breastmilk production?

Research suggests that only when caloric intake is less than 1500 kcal/day, milk output and infant intake may be decreased. The evidence on restricted caloric intake and effect on breastmilk production is dated and sparse and further limited by small sample sizes and high dropout rates in the studies. There is little evidence suggesting that breastmilk volume or nutrient composition is negatively affected by gradual weight loss.

It is recommended that breastfeeding women who are consuming less than 1500 kcal/day be referred to a Registered Dietitian.

What is the effect of religious fasting on breastmilk composition and a mother’s nutrient intake?

Fasting is observed in many religions and is defined as a partial or total abstinence from all foods or prohibited foods, during a specific time period. Very little scientific research has examined the impact of religious fasting on breastfeeding. There are reported decreases in breastmilk micronutrient and macronutrient composition, as well as nutrient intakes of mothers during Ramadan fasting. However, research suggests there is no detrimental effect of this type of fasting on infant growth parameters.

It is recommended that breastfeeding women excuse themselves from fasting. Those who choose to participate in religious fasting are advised to make every effort to consume adequate food and fluids during non-fasting hours.

Can the level of protein, carbohydrate and fat in breastmilk be increased (or decreased) by eating more (or less) of these macronutrients?

The level of protein in breastmilk does not appear to be affected by the amount of protein in the breastfeeding woman’s diet. Lactose is the main carbohydrate in breastmilk and its amount in breastmilk is not influenced significantly by maternal diet. Maternal diet does impact the types of fatty acids found in breastmilk but does not impact the total amount of fat. For example, the amount of trans fatty acids a mother has in her diet is also correlated to the amount found in her breastmilk. It is therefore recommended to limit trans-fat intake. As well, the amount of some omega-3 fatty acids (e.g. docosahexaenoic acid) in breastmilk is influenced by maternal diet (see question and answer below).

Does maternal intake of docosahexaenoic acid (DHA) affect the DHA composition in breastmilk?

Yes, maternal dietary DHA is positively correlated with the amount of DHA that is present in her breastmilk. DHA is a type of omega-3 fatty acid that is known to be critical for brain and retinal development in infancy. Omega-3 fatty acids are long chain polyunsaturated fatty acids (LCPUFA) that also include alpha-linolenic acid (ALA) and eicosapentaenoic acid (EPA). DHA is primarily found in fish, shellfish, fish oil supplements, and omega-3 enriched eggs.

A European Union consensus statement recommends 200 mg DHA per day for pregnant and breastfeeding women. In a recent pregnancy and postpartum study of Albertan women (n= 600), less than 1/3 met this recommendation. Eating 2 Food Guide Servings of fatty fish per week provides approximately 200 mg DHA per day. Recommend breastfeeding women eat at least 2 Food Guide Servings of low mercury fatty fish (e.g. salmon, herring, Atlantic mackerel, rainbow trout) per week to help support a healthy fat composition in breastmilk.
A woman can also increase the DHA content in her breastmilk by taking a DHA supplement. Women who do not consume the recommended 2 Food Guide Servings of fatty fish per week can discuss supplementation with their healthcare provider.

ALA is found in plant sources such as walnuts, flaxseed, and canola and soybean oils. Humans can convert ALA to DHA, however the amount of ALA converted is very low. There is insufficient evidence to know if ALA consumption is adequate (in the absence of consuming any DHA containing foods) to maintain DHA status.

### Do extra fluids increase breastmilk production?

Extra fluids likely do not increase breastmilk production. There is insufficient evidence to support this view (beyond what is required to ‘satisfy thirst’). One study observed a wide range (872-3704 mL/day) of total fluid intakes among a small sample of breastfeeding women with no significant relationship between 24 hour total fluid intake and breastmilk volume; however, breastfeeding women who consumed lower amounts of fluid had more concentrated urine.

### Does maternal diet affect the vitamin and mineral content of breastmilk?

Breastmilk content of some vitamins and minerals (thiamin, riboflavin, vitamin B6, vitamin B12, choline, vitamin A, vitamin D, selenium and iodine) may be low in mothers with these nutritional deficiencies. However, deficiencies for the majority of these nutrients are rare in North America (although data specifically for breastfeeding women is not available). If maternal deficiency is suspected, it is recommended that the mother be referred to a Registered Dietitian to assess dietary adequacy and the potential need for nutritional supplements. Breastfeeding women who follow a vegan diet may not get enough vitamin B12 in their diet, and may produce breastmilk deficient in B12.

Some studies have shown that an infant’s vitamin D requirements can be met through breastmilk if the breastfeeding mom takes large doses of vitamin D (e.g., 6400 IU/day); however, this amount exceeds the tolerable upper intake level (UL) of 4000 units/day and is not recommended. At this time, breastfeeding women are recommended a multivitamin/mineral supplement with 400 IU vitamin D, unless directed otherwise by their physician.

### Does iron deficiency anemia affect breastmilk production?

No, there is no evidence that postpartum iron deficiency anemia inhibits breastmilk production directly, although 2 observational studies reported a relationship between postpartum iron deficiency anemia and breastfeeding duration. Henly et al. found breastfeeding duration was shorter for anemic mothers compared to non-anemic mothers. Rioux et al. observed anemia was associated with discontinuation of breastfeeding before 4 months.

It is recommended that breastfeeding mothers with signs and symptoms of postpartum iron deficiency anemia (e.g. fatigue and exhaustion, postpartum hemorrhage, pale skin, vegetarian/vegan dietary pattern, etc.) be referred to their healthcare provider to screen for low ferritin and hemoglobin.
Refer to the questions below for information on the following in relation to a breastfeeding mother’s diet:

- vegan diet
- alcohol
- galactagogues
- gas
- constipation
- sugar substitutes
- probiotics
- allergy prevention
- foodborne illness
- fish
- suspected allergies
- candidiasis/thrush
- caffeine
- herbal products
- colic
- suspected allergies
- fish

### Are there any extra considerations with a vegan diet?

A vegan diet excludes all food of animal origin including meat, fish, poultry, eggs, milk and milk products. Vitamin B₁₂ is a nutrient found in food from animal sources, and therefore, vegan diets may not provide enough vitamin B₁₂. Vegan breastfeeding women who do not get enough vitamin B₁₂ may produce breastmilk deficient in vitamin B₁₂. Severe vitamin B₁₂ deficiency in infants may lead to growth, developmental, and neurological concerns. Vitamin B₁₂ deficient breastmilk can be prevented and improved by increasing the mother’s vitamin B₁₂ intake. If foods or supplements with vitamin B₁₂ are not consumed regularly, it is recommended that the breastfeeding mother consult a physician about having her vitamin B₁₂ levels checked. 

Vegan mothers who are not deficient in B₁₂ can obtain adequate amounts (2.8 mcg/day) by consuming at least 2 daily food sources of vitamin B₁₂ foods and a multivitamin/mineral supplement (recommended for all women of childbearing years). It is recommended that the vitamin B₁₂ containing foods be eaten at separate times during the day to promote better absorption. There are many vegan foods fortified with vitamin B₁₂. Examples of these foods include: Red Star Nutritional Yeast, fortified soy beverage, fortified meat substitute, or fortified ready-to-eat breakfast cereals.

A vegan diet supplies little or no EPA or DHA. Breastfeeding women who have no or low intakes of EPA and DHA will have breastmilk that is also low in these omega-3 fatty acids. Breastfeeding mothers following a vegan diet may need to consume an EPA/DHA vegan supplement (derived from marine algae) to meet their daily needs. Breastfeeding vegan women can be referred to a Registered Dietitian for further counselling on nutrition and supplementation.

### What can a breastfeeding woman do about constipation?

Constipation is a common postpartum problem. Advise breastfeeding women to gradually increase fluid and fibre intake to ensure they achieve adequate intakes (12 cups or 3.1 L/day for fluid; 29 g/day for fibre.)

To increase fibre intake, advise women to:
- Eat a variety of vegetables, fruit, whole grains, and legumes (beans, peas, lentils) daily.
- Compare food labels (Nutrition Facts table) to choose foods with more fibre. Choose foods with more than 2 g of fibre per serving.
- Refer to the handout: Managing Constipation under “Gastrointestinal”

If needed, bulk-forming laxatives (psyllium or methylcellulose) are a safe fibre supplement for breastfeeding women because they are not absorbed by the gut and as a result, do not find their way into infant circulation.
Are breastfeeding women more susceptible to foodborne illness?

No, breastfeeding women are not more susceptible to foodborne illness than the general population, as they are not considered a vulnerable population. As such, food safety guidance aimed at vulnerable populations such as pregnant women does not apply to breastfeeding women. For example, breastfeeding women do not need to avoid uncooked deli meats or semi-soft cheeses. Breastfeeding women can be advised to follow the standard food safety recommendations given by Health Canada for the general population.

Are foodborne illnesses transmitted to the infant through breastmilk?

It is not clear if foodborne pathogens can be transmitted from a mother to her infant through breastmilk. In the vast majority of cases, the presence of maternal infection from foodborne pathogens is not a contraindication to breastfeeding. There does not appear to be a direct risk to the infant if a breastfeeding mother ate food containing harmful bacteria.

Can expressed breastmilk cause foodborne illness in the infant?

If handled incorrectly, expressed breastmilk can be a reservoir for microorganism growth and can be a potential source of infection for foodborne illness. It is recommended to follow the guidelines for pumping, storing, thawing, and warming expressed breastmilk. Refer to Storing Expressed Breastmilk in Healthy Parents Healthy Children.

Advise families that human milk obtained via the Internet or directly from individuals puts an infant at risk for negative outcomes. There are potential risks the milk may be contaminated with bacteria that can cause foodborne illness, viruses such as HIV, or other substances which are health hazards. For these reasons the consumption of unprocessed donor human milk obtained from private sources is not recommended by Health Canada.

Pasteurized donor human milk from regulated milk banks is considered safe from these risks because milk banks abide by strict operating procedures and are regulated under the Food and Drugs Act and Regulations.

What are the recommendations for caffeine intake in breastfeeding women?

It is recommended that breastfeeding women limit their caffeine intake to 300 mg per day. This amount is unlikely to have adverse effects on postnatal development. Caffeine rapidly passes into breastmilk after maternal ingestion, with a peak level usually occurring about 1 hour after ingestion. The elimination half-life of caffeine ranges between 3-7 hours and can be influenced by many factors, including, sex, age, use of oral contraceptives, pregnancy, and smoking. The half-life is the time required for a quantity to reduce to half its initial value. Fussiness, jitteriness and poor sleep patterns have been reported in the infants of mothers with very high caffeine intakes, equivalent to about 10 or more cups of coffee daily.
Advise breastfeeding women to consider all sources of caffeine to keep to the limit of 300 mg per day, including:

- Drinks and food: It is not mandatory in Canada for manufacturers to include the caffeine content (amount) on food labels, unless caffeine is added to the food as an ingredient. The approximate caffeine content of common beverages and food is presented in Table 1. The caffeine content of coffee and tea can vary depending on the plant variety and growing conditions, brewing method and time, proportion of coffee or tea to water, roasting method, particle size ('grind') and serving size. Breastfeeding women may be able to find the caffeine content of a specific brand from a product’s company (website or customer service).

- Supplements and over the counter medications (e.g. pain relievers, diuretics, cold remedies and weight loss aids): Look at the medication label to determine caffeine content. Advise women to consult with their healthcare provider before taking any medications.

Caffeinated energy drinks (e.g. drinks and shots) are not recommended for breastfeeding women. Energy drinks may have herbal ingredients that have not undergone scientific evaluation.

### Table 1. Approximate Caffeine Content of Common Beverages and Food

<table>
<thead>
<tr>
<th>Food and beverages</th>
<th>Volume</th>
<th>Approximate caffeine content (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee, brewed</td>
<td>1 cup (250 mL)</td>
<td>100 – 173 range: 79 – 173</td>
</tr>
<tr>
<td>Coffee, espresso</td>
<td>1 oz (30 mL)</td>
<td>64 – 125 range: 47 – 125</td>
</tr>
<tr>
<td>Coffee, espresso-based drinks</td>
<td>1 cup (250 mL) 14 oz (425 mL) 20 oz (591 mL)</td>
<td>66 – 205 (cappuccino, latte &amp; Americano)</td>
</tr>
<tr>
<td>Coffee, single cup brewers</td>
<td>Per disc/pod</td>
<td>85-105 (T Disc) 70-150 (K-Cup)</td>
</tr>
<tr>
<td>Coffee, instant</td>
<td>1 cup (250 mL)</td>
<td>66 – 79</td>
</tr>
<tr>
<td>Tea, black</td>
<td>1 cup (250 mL)</td>
<td>50</td>
</tr>
<tr>
<td>Tea, green</td>
<td>1 cup (250 mL)</td>
<td>30</td>
</tr>
<tr>
<td>Tea, white</td>
<td>1 cup (250 mL)</td>
<td>16</td>
</tr>
<tr>
<td>Tea, herbal (tisanes)</td>
<td>1 cup (250 mL)</td>
<td>0</td>
</tr>
<tr>
<td>Tea, iced, sweetened</td>
<td>1 cup (250 mL)</td>
<td>8 – 28</td>
</tr>
<tr>
<td>Carbonated drinks, cola, pepper-type, lemon-lime with added caffeine</td>
<td>1 cup (250 mL) 1 can (355 mL)</td>
<td>23 – 33</td>
</tr>
<tr>
<td>Chocolate milk</td>
<td>1 cup (250 mL)</td>
<td>3</td>
</tr>
<tr>
<td>Energy drink</td>
<td>1 oz (30 g)</td>
<td>6</td>
</tr>
<tr>
<td>Milk chocolate</td>
<td>1 oz (30 g) (size of a white eraser)</td>
<td>13-24</td>
</tr>
</tbody>
</table>

§ Examples from common coffee-shops in Alberta
What are the recommendations about alcohol consumption during breastfeeding?

Advise breastfeeding women to consider avoiding alcohol as it is transferred into the breastmilk. The safest option for a breastfeeding mother is to not drink alcohol. However, if a woman chooses to have an occasional alcoholic drink, it is recommended that she wait until the alcohol has cleared her breastmilk (approximately 2-3 hours per standard drink, depending on the weight of the mother) before she breastfeeds. One standard drink is defined as: 142 mL [5 oz.] of wine, 341 mL [12 oz.] of beer or 43 mL [1.5 oz.] of liquor.

Alcohol has been detected in breastmilk at a level that parallels the mother’s blood plasma level within approximately 30-60 minutes after ingestion. Alcohol does not remain in breastmilk; it clears from breastmilk at the same rate as the maternal blood concentration. There are many factors that influence the blood alcohol concentration of the mother such as the volume of alcohol ingested along with elimination factors such as kidney and liver function. Drinking water or coffee, resting, or pumping and dumping breastmilk while drinking won’t clear the alcohol from breastmilk any faster. However, breastfeeding mothers may choose to pump and discard just enough breastmilk during the 2-3 hour per drink timeframe to relieve discomfort.

The evidence around the effects of maternal alcohol intake on the breastfed infant is limited. Risks to an infant after exposure to alcohol through breastmilk include disrupted sleep patterns, decreased breastmilk intake due to reduced production, and potential negative effects on brain development.

If a breastfeeding mother makes the decision to occasionally consume alcohol some general information can be provided based on an assessment of the mother’s alcohol use. Breastfeeding women can be advised to make a plan for the feeding times that they cannot breastfeed due to alcohol intake. To reduce the infant’s risk, a breastfeeding mother can be advised to:

- Limit alcohol to 1 or 2 drinks per occasion.
- Feed her infant prior to alcohol ingestion.
- Allow enough time for the alcohol to be eliminated from her body before breastfeeding her infant.
- Pump and store her breastmilk before having a drink so the infant can continue to receive breastmilk.

Healthcare providers concerned about a mother’s alcohol intake can refer to local protocols on screening and referral.

What factors influence the infant’s exposure to alcohol through breastmilk?

The infant’s level of alcohol exposure through breastmilk may be influenced by many factors. Some factors include:

- mother’s ability to metabolize alcohol.
- frequency, volume, and concentration of alcohol consumption.
- infant’s risk level based on their age and ability to metabolize alcohol.

As each of these factors varies from individual to individual, the safest option for a breastfeeding mother is to avoid alcohol.
**Does alcohol increase breastmilk production?**

Alcohol does not increase breastmilk production. In fact, drinking the equivalent of 1.5 standard drinks has been shown to lead to an overall reduction in milk production, block the release of oxytocin, and interfere with the milk ejection reflex.\(^9^8,1^0^3,1^0^6\)

In some traditions, beer is recommended for initiation of breastfeeding and enhancement of breastfeeding success.\(^1^0^7\) Some evidence suggests that beer can stimulate prolactin secretion which may enhance lactogenesis.\(^1^0^4,1^0^7\) The component in beer responsible for the effect on prolactin secretion is not the alcohol content but a polysaccharide from barley.\(^1^0^4,1^0^7\) Non-alcoholic beer would have a similar effect on prolactin secretion.\(^1^0^7\)

Alcoholic beer is not recommended to increase breastmilk production as breastfeeding after consumption of a single dose of alcoholic beer by nursing mothers was found to decrease the amount of milk consumed by infants \(^1^0^8\) and can cause infant agitation and poor sleep patterns.\(^1^0^4\) Non-alcoholic beer is unlikely to affect a breastfed infant \(^1^0^9\) and may be suggested as an appropriate substitute to alcoholic beer.\(^1^0^7\)

See also: Are there foods or herbs that increase breastmilk production (galactagogues) that can be safely recommended to breastfeeding women?

**Are sugar substitutes safe for breastfeeding mothers?**

The following sugar substitutes are permitted for use in Canada\(^1^1^0\) are considered safe for consumption at or below the acceptable daily intake (ADI).\(^1^1^1\) The ADI is set for all Canadians and there are no specific recommendations for breastfeeding.\(^1^1^1\)

**Table 2. Sugar Substitutes**

<table>
<thead>
<tr>
<th>Safe Sugar Substitutes</th>
<th>ADI (mg/kg body weight)(^1^1^2) unless otherwise noted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acesulfame potassium(^1^1^3)</td>
<td>15</td>
</tr>
<tr>
<td>Advantame(^1^1^4)</td>
<td>5 (^1^1^5)</td>
</tr>
<tr>
<td>Aspartame(^1^1^3,1^1^6)</td>
<td>40</td>
</tr>
<tr>
<td>Monk fruit extract (also called Luo han guo)(^1^1^7)</td>
<td>Not specified</td>
</tr>
<tr>
<td>Neotame(^1^1^3)</td>
<td>2</td>
</tr>
<tr>
<td>Saccharin(^1^1^6,1^1^8)</td>
<td>5</td>
</tr>
<tr>
<td>Sucralose(^1^1^3)</td>
<td>8.8</td>
</tr>
<tr>
<td>Sugar alcohols* (polyols), hydrogenated starch hydrolysate (mixture of sugar alcohols(^1^1^9) and polydextrose(^1^1^3,1^1^6)</td>
<td>Not specified; however, intake of &gt;10-20 g/day may cause flatulence, diarrhea, and other gastrointestinal symptoms(^1^2^0,1^2^1)</td>
</tr>
<tr>
<td>Stevia(^1^1^6)</td>
<td>4</td>
</tr>
<tr>
<td>Thaumatin(^1^1^3)</td>
<td>0.9</td>
</tr>
</tbody>
</table>

*Sugar alcohols permitted for use as food additives in Canada include: hydrogenated starch hydrolysates, isomalt, lactitol, maltitol, maltitol syrup, mannitol, sorbitol, sorbitol syrup, xylitol and erythritol.\(^1^2^2\)

It is not clear whether cyclamate (e.g. Sugar Twin\(^1^2^3\) or generic brands) is safe for use during breastfeeding.\(^1^2^4\) Cyclamate is not permitted as a food additive in Canada but can be sold as a non-food product and must carry the following cautionary statement: “the sweetener should be used only on the advice of a physician”.\(^1^2^5\)
**Is fish safe to eat while breastfeeding?**

Yes, it is safe and encouraged to eat low mercury fish while breastfeeding. However, it is recommended that breastfeeding women follow Health Canada’s guidance on limiting high mercury fish. High mercury fish include fresh or frozen tuna, shark, swordfish, escolar, marlin, and orange roughy. Health Canada states that breastfeeding women can eat up to 150 g (2 Food Guide Servings) per month of these fish species combined. When purchasing canned tuna, breastfeeding mothers can be advised to choose light tuna such as skipjack, yellowfin and tongol which are relatively lower in mercury versus albacore or white tuna, which should be limited to 300 g (4 Food Guide servings) per week. It is recommended that breastfeeding women consume 2 Food Guide Servings of fatty fish per week. Fish and shellfish that contain higher levels of DHA and EPA and are also low in mercury include: anchovy, capelin, hake, herring, Atlantic mackerel, pollock (Boston bluefish), salmon (farmed and wild), smelt, rainbow trout, shrimp, clams, mussels and oysters.

Fish is the primary source of mercury exposure in humans. Mercury exposure can adversely affect an infant’s growing brain and nervous system. Mercury is excreted into breastmilk, although its concentration is a fraction of the level of maternal blood supplied to the fetus during gestation. Typical diets consumed by breastfeeding mothers pose no health hazard to breastfed infants.

If breastfeeding mothers plan to eat locally caught fish, they can be advised to look up local fish consumption advisories at My Wild Alberta: [http://mywildalberta.com/fishing/safety-procedures/fish-consumption-advisory.aspx](http://mywildalberta.com/fishing/safety-procedures/fish-consumption-advisory.aspx)

**What advice can be given to breastfeeding women on the safe use of natural health products, herbal teas, and herbs?**

Because of the limited number of studies on herb use during breastfeeding, organizations have mixed reports and safety recommendations, making it confusing for both the mother and clinician. Organizations that provide recommendations for natural health products include: Practice-based Evidence in Nutrition, LactMed, Medications and Mother’s Milk, and the Natural Medicines Database. The recommendations provided here take into account the recommendations from the above organizations as well as other evidence.

Herbal products (including herbal breastfeeding teas and some dietary substances) are often considered natural but many have pharmacologically-active substances that could have a positive or negative effect on the mother (e.g. breastmilk supply) or the infant. Risks of using an unlicensed natural health product include interaction with medications or other natural health products, non-standard dosing, and contamination or incorrect ingredients.

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* Natural health products (NHPs), also referred to as "complementary" or "alternative" medicines, are naturally occurring substances used to restore or maintain good health. They include vitamins and minerals, herbal remedies, homeopathic medicines, traditional medicines like traditional Chinese and Ayurvedic (East Indian) medicines, probiotics, and other products like amino acids and essential fatty acids.
If a breastfeeding woman chooses to use natural health products, herbal teas or other herbal products, the following advice can be provided:

- Due to insufficient evidence on their safety and efficacy, there are no natural health products, including herbal supplements, which can be widely recommended for breastfeeding women.
- Talk to a healthcare professional knowledgeable about natural health and herbal products or call the Medication and Herbal Advice Line (1-800-332-1414) for advice.
- Choose a natural health product with an 8-digit Natural Product Number (NPN) or Homeopathic Medicine Number (DIN-HM) on the label, which identifies the product as a licensed natural health product in Canada and indicates it is safe and effective when used according the instructions on the label. Note: some commercial herbal teas and beverages contain a NPN or DIN-HM.
- Read and follow all instructions on the product label (e.g., steeping time). Ensure there are no warnings for breastfeeding women.
- Review the ingredient list of commercial herbal teas to ensure the herbs are considered safe for breastfeeding women (see Table 3), and consume these in moderation (a total of 500 mL per day). Many teas with names that indicate a single herb (e.g., “Lemon Zinger”) contain multiple ingredients. Not all herbs in herbal teas marketed to breastfeeding women have been studied in lactation or are necessarily safe.
- Some herbs and herbal teas that are considered safe during pregnancy may not be safe during breastfeeding, and vice versa.
- Herbs commonly used in food preparation in small amounts are safe.

### Table 3. Herbal Teas Generally Safe for Breastfeeding Women

<table>
<thead>
<tr>
<th>Herbs as ingredients in commercial herbal teas generally considered safe for breastfeeding women to consume in moderation (a total of 2 cups (500 mL) per day)†‡.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anise seed or fruit 146,145,144,143</td>
</tr>
<tr>
<td>Blessed thistle herb/herb top 146,150,151</td>
</tr>
<tr>
<td>Caraway seed 146,143,152</td>
</tr>
<tr>
<td>Cinnamon spice/bark 143,144,145</td>
</tr>
<tr>
<td>Fenugreek seed 146,143,158,159</td>
</tr>
</tbody>
</table>

It is recommended that breastfeeding mothers avoid the following herbs in all forms (including teas and supplements) due to potential adverse effects for herself or her infant. Potential adverse effects for each herb can be found in the cited references.

- Aloe vera/aloe latex (oral use) 161,162,163
- Blue cohosh 164,165,166
- Borage leaf (Borago officinalis) 167,168
- Comfrey leaf (Symphytum officinalis) 167,169
- Kombucha tea 170,171

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†Two cups (500 mL) per day was chosen as “in moderation” based on: Health Canada’s use of 2-3 cups as “in moderation” for certain herbal teas in pregnancy. From this, the lower range of 2 cups (500 mL) was chosen, as 3 cups (750 mL) of herbs in tea form is often presented as the medicinal dose.

‡The evidence for this recommendation and list of herbs is based on the following: the herb is listed as Generally Recognized as Safe (GRAS) for use as a food or food additive in the US (note: Canada does not have this designation); and/or the herb is included in the Canadian Food and Drug Regulations as a permitted spice, dressing or seasoning (Division 7) or flavouring preparation (Division 10); and/or where there is research, there are no reported severe adverse effects of the herbal tea on mother or infant in amounts up to 500 mL/day.
Are there foods or herbs that increase breastmilk production (galactogogues) that can be safely recommended to breastfeeding women?

Galactogogues are substances believed to increase breastmilk production. Many foods and herbs throughout history have been used and recommended to try to aid breastmilk production, including anise, blessed thistle, fennel, fenugreek, milk thistle, and shavarti (*Asparagus racemosus*), oats, dill, and barley.

There is a lack of research on the use of foods as galactogogues. Many herbal teas are marketed towards breastfeeding mothers to increase breastmilk production. (Refer to Table 3 for the assessed safety of some of these herbs). Although some herbs have shown potential as galactogogues, few randomized clinical trials are available to make conclusions about their effectiveness or safety for this purpose. Due to this lack of evidence on their efficacy and/or safety, no food or herb can be broadly recommended to breastfeeding women to increase breastmilk production.

Galactogogues are not a substitute for evaluation and counselling on modifiable factors that affect milk production (breastmilk expression frequency, milk removal effectiveness). If breastfeeding women wish to use potential galactogogues in an effort to increase breastmilk production, they can discuss this with their healthcare provider in order to make an informed decision. Healthcare providers and breastfeeding women can also call the AHS Medication and Herbal Advice Line for advice on specific herbs (1-800-332-1414).

See also: What advice can be given to breastfeeding women on the safe use of natural health products, herbal teas and herbs?

See also: Does alcohol increase breastmilk production?

Are probiotics safe for breastfeeding mothers?

This section includes information pertaining only to the safety of probiotic use during lactation. For background information on probiotics please refer to the Nutrition Guideline for Healthy Infants and Young Children: Prebiotics and Probiotics [www.albertahealthservices.ca/info/Page8567.aspx](http://www.albertahealthservices.ca/info/Page8567.aspx).

There are minimal studies on breastfeeding women consuming probiotic foods or supplements. Of those studies conducted, a variety of probiotic strains and dosages were used. As probiotics are strain specific, benefits and safety from one strain cannot be extrapolated to another strain. There have been no documented adverse effects on the mother or her infant when breastfeeding mothers have consumed probiotics. Bacteria, such as lactobacilli or bifidobacteria, are a natural part of the intestinal flora and various strains have been found in breastmilk. Lactobacilli and bifidobacteria which have historically been used in foods are generally considered safe for consumption for the general public, including breastfeeding women.

Cow’s milk proteins are a common growth substrate for some probiotics and very small quantities may be present in some probiotic supplements. If a breastfeeding woman or her breastfed infant has a cow’s milk protein allergy, it is recommended that the growth medium of the probiotic supplement be checked prior to consumption.
Breastfeeding women who do not have a cow's milk allergy can consume food products sold in Canada which contain probiotics (e.g. probiotic yogurt). Due to limited research on supplement strains and dosages, no public health recommendation can be made for breastfeeding women wanting to take a probiotic supplement.

**What should a breastfeeding woman do if she suspects that her infant is having an allergic reaction to something in her breastmilk?**

If a breastfed infant develops symptoms of a food allergy§, such as bloody stools, it is possible that the child is reacting to a nutrient (commonly a protein) that has gone through the breastmilk from the mother’s diet. If this is suspected and the mother can identify a food that may have caused the reaction, that food can be eliminated from the mother diet. A physician can then be consulted to determine the potential cause of the reaction and confirm if the infant has a food allergy. Even when milk allergy has been ruled out and the infant is exhibiting colic, a trial elimination of cow’s milk from the maternal diet can be tried for 2 weeks. Eliminated foods found to have no effect on the infant can be re-introduced into the diet. It is recommended that breastfeeding mothers who restrict a whole food group (e.g. Vegetables and Fruit, Grain Products, Milk and Alternatives or Meat and Alternatives) see a Registered Dietitian for nutritional counselling.

**Do changes in the breastfeeding mother’s diet help relieve infant colic?**

Infant colic is a set of behaviours, most notably crying, that may occur in healthy infants and usually starts in the early weeks of life. It peaks between 5 to 8 weeks of age and usually resolves between 4 to 6 months of age. Colic is defined as an infant that is healthy, gaining weight well and has bouts of irritability, fussiness or crying. These bouts start and stop without obvious cause, last a total of 3 hours or more per day, happen at least 3 days per week (for at least 1 week) and there is no failure to thrive. Although impact on colic in most research was found to be ineffective, some studies have found an association with colic symptoms and maternal intake of cruciferous vegetables (cauliflower, cabbage, garden cress, bok choy, broccoli, and Brussels sprouts), cow’s milk, and onion in exclusively breastfed young infants. Breastfeeding women may eliminate suspected foods one at a time to determine whether one is causing colic symptoms. Eliminated foods found to have no effect on infant colic can be re-introduced into the diet.

§ See Nutrition Guidelines for Healthy Infants and Young Children: Allergy Prevention for more information on the prevention, symptoms and diagnosis of an infant allergy.
A breastfeeding mother wishing to follow a hypoallergenic diet or a diet that eliminates a whole food group (e.g. Milk and Alternatives) may be referred to a Registered Dietitian to ensure nutritional adequacy.

A mother who suspects her infant has colic can discuss her concerns with her healthcare provider. See also: Are there foods a breastfeeding woman should or should not eat to prevent allergies in her infant? and Healthy Infants and Young Children Prebiotics & Probiotics Nutrition Guideline

**Does maternal diet impact infant gas?**

The evidence suggests that spicy or gas producing foods (e.g. cruciferous vegetables) in the maternal diet do not usually affect breastfed infants. Modifying the maternal diet to reduce or eliminate infant gas is not normally effective or recommended, although a trial elimination of suspected foods one at a time can be tried. If a food is removed from the diet and the mother observes no improvement in the infant’s gas, the food can be reintroduced into the diet to prevent unnecessary food restrictions. Evidence also does not support lactase deficiency as a likely cause of gas as this condition is rare in infants. It is normal for infants to have gas, but if a caregiver believes that an infant is experiencing distress due to being overly gassy, a physician can be consulted.

**Are there foods a breastfeeding woman should or should not eat to prevent allergies in her infant?**

No special diet is recommended during lactation to prevent an allergy in the infant. The available evidence does not support maternal avoidance of commonly allergenic foods (e.g. peanuts, seafood, cow’s milk) while breastfeeding in an effort to prevent allergy in her infant. Furthermore, unnecessary exclusion of food (e.g. exclusion of the Milk and Alternatives food group) can put a mother and infant at risk of nutritional inadequacy.

**What is the impact of the breastfeeding woman’s diet on candidiasis/thrush?**

The overgrowth of yeast, a type of fungus, called Candida albicans (C. albicans) is associated with the development of candidiasis or thrush. Thrush is often a cause of breast and nipple pain in breastfeeding mothers. It is a common belief that a diet restricted in simple sugars, dairy products, yeast, fermented foods, fungi, fruit, gluten-containing grains and starchy vegetables will prevent or possibly treat C. albicans infections. There is limited research on humans examining the effectiveness of these dietary restrictions on the prevention or treatment of candidiasis, therefore, this cannot be recommended.

**Are there any related resources on maternal nutrition and breastfeeding that I can use with my clients?**

Healthy Parents Healthy Children - Basic information on nutrition for healthy mothers and infants. Web page: www.healthyparentshealthychildren.ca. Also available as printed books.

Poison and Drug Information Service (PADIS) 1-800-332-1414. Medication and Herbal Advice. Free, confidential advice provided by an information specialist who is a nurse or pharmacist. Web page: www.albertahealthservices.ca/topics/Page11975.aspx
Income and social support for breastfeeding women
- Breastfeeding women who meet the Alberta Works eligibility criteria can request funding to help cover the cost of a healthy diet. Web page: [http://humanservices.alberta.ca/AWonline/IS/4874.html](http://humanservices.alberta.ca/AWonline/IS/4874.html)
- The Canada Prenatal Nutrition Program may provide prenatal vitamins, food, food coupons and/or nutrition counselling. Web page: [www.capccpnpalberta.com](http://www.capccpnpalberta.com)

Are there any professional resources on maternal nutrition while breastfeeding?

Alberta Health Services self-learning modules on [My Learning Link](http://learninglink.ahs.ca) platform, include:
- Breastfeeding Foundations
- Managing Breastfeeding Challenges and Supplementation
- Breastfeeding Management for the Healthcare Provider
- Public Health Nutrition Module: Nutrition for Breastfeeding Moms

Those external to Alberta Health Services can access Breastfeeding Foundations and Managing Breastfeeding Challenges and Supplementation at the following website: [http://aphp.dapasoft.com](http://aphp.dapasoft.com).

Poison and Drug Information Service (PADIS) 1-800-332-1414. Medication and Herbal Advice. Services offered to assist healthcare professionals and clients.

LactMed ([https://www.toxnet.nlm.nih.gov/newtoxnet/lactmed.htm](https://www.toxnet.nlm.nih.gov/newtoxnet/lactmed.htm) - public access) and Medications and Mothers' Milk Online ([https://medsmilk.com](https://medsmilk.com) - access through AHS) are databases with information on the levels of drugs and herbs in breastmilk and infant blood, and possible risks to the infant and mother. Lactmed is updated monthly.

Natural Medicines ([https://naturalmedicines.therapeuticresearch.com](https://naturalmedicines.therapeuticresearch.com) - access through AHS) is a database which contains information on dietary supplements, natural medicines, and complementary alternative and integrative therapies. Drop down menu for quick search on Pregnancy and Lactation.
References


75. Tyrula EE, Dodson WE. Caffeine secretion into breast milk. Archives of Disease in Childhood. 1979;54(10):787.


