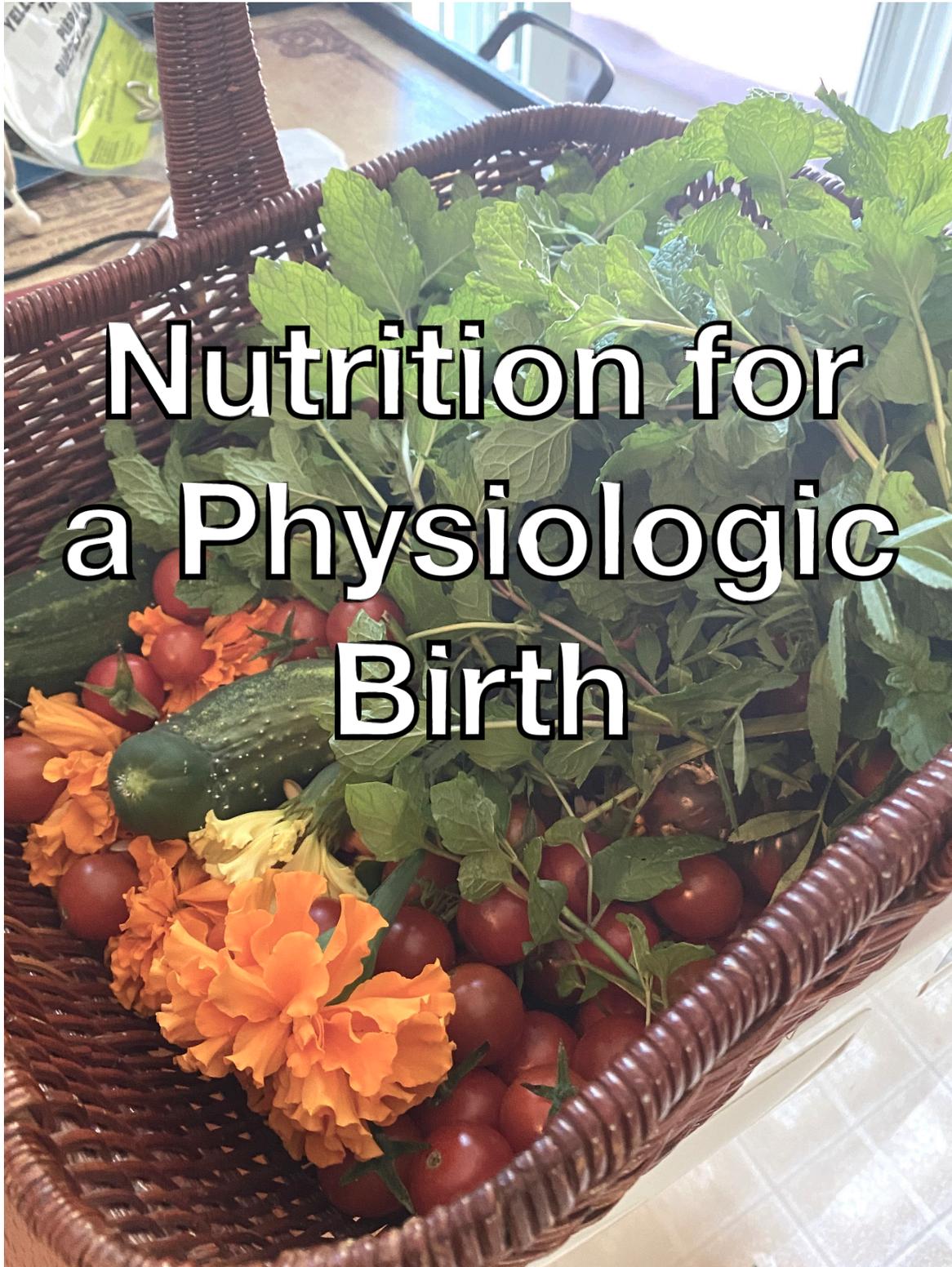




**THRIVE**

PRENATAL EDUCATION



# Nutrition for a Physiologic Birth

## Foreward

This document is a compilation of research I have done to support my clients staying home and having physiologic births outside the system. Some information I have gleaned from friends here and there, but the majority of the information comes from the sources sited on the “References” page.

I always recommend Lily Nichols book “Real Food for Pregnancy”, and she is my go-to for pregnancy nutrition advice.

I hope you enjoy this document, and if you don’t already think of food as healing medicine, that you might start to shift your focus and not only eat to live, but live to eat (good food, that is).

Cheers to real food,

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God created food to be the best preventative medicine, and modern cultural food practices have changed food so much that it often barely resembles its original form. Vitamins, minerals and nutrients work as a team in real foods to best grow our babies, and separating them into pill form will never truly prevent disease like good food will, and it's been proven time and time again that traditional cultures who continue to eat real food have much lower rates of disease.

“Fetal programming” is the hypothesis that inadequate nutrition in pregnancy can and will impair the baby's development and lead to lifelong metabolic changes that can lead to diabetes, heart disease, high blood pressure and obesity. Genes can be turned on and off by prenatal exposure to nutrients, blood sugar and insulin levels, exercise habits, stress hormones, toxins etc.

We also know babies taste through the amniotic fluid, so use this opportunity to expose them to a wide range of healthy, colourful foods.

It's also a good time to practice mindful eating, which includes listening to the signals food gives your body, eating when hungry, and stopping when full. Try to savour each bite. Mindful eating has been shown to lead to a more nutritious diet and less junk food consumption. When preparing and eating food, consider “will this help me build a healthy baby”?

Food is categorized into macronutrients and micronutrients.

- **Macronutrients:** Something that gives you energy (carbohydrates, fat, protein).
- **Micronutrients:** Vitamins and minerals your body needs for other functions.



# Macronutrient 1: Carbohydrates

**Recommended daily amounts:** 90-150 g per day

## **Function:**

- Provides fuel for your body.

## **Sources:**

- Carbs are found in healthy and unhealthy foods.
- Grains (whole grains, refined grains, anything made with flour)
- Root veg/high-starch vegetables (potatoes, sweet pot/yams, squash, green peas, corn)
- Fruits
- Legumes (beans, lentils, split peas)
- Some dairy products (milk and yogurt containing lactose)
- and all processed food made with these products

## **Excess Risks:**

- Carbs are the only macronutrient that will significantly raise the level of your blood sugar. Higher blood sugars (even if not diabetic) raise the risk of congenital heart defects in babies as well as neural tube defects.
- Excessive weight gain and macrosomic baby
- Gestational diabetes
- Preeclampsia
- Gall bladder disease
- Metabolic problems for baby longterm
- Impaired lung development in baby which increases risk of catching life-threatening respiratory viruses as children.

## **Recommendations:**

- Carb intake should be balanced with other foods to avoid blood sugar spikes.
- Choose most nutrient-dense carbs (whole foods) and avoid processed, refined carbs.
- Legumes are high in fibre which slows the digestion of carbohydrates and won't spike your sugars as much. They are considered "low glycemic index" foods.
- Substitute with cheese, butter, heavy cream, plain Greek yogurt (which has lactose whey strained out).



## Macronutrient 2: Protein

**Recommended daily amounts:** 80-100g first half of pregnancy, 100-120g second half, higher levels if very physically active or a larger person

### Functions:

- Proteins are made of amino acids that build new cells. There are twenty standard amino acids.
- Proteins are very filling, stabilize blood sugar levels.

### Food Sources:

- Complete proteins are protein foods with a mix of all twenty amino acids, and are animal foods such as meat, fish, eggs, dairy.
- Incomplete proteins contain only some amino acids, such as beans/legumes, nuts, seeds.
- Essential amino acids are those that you have to consume enough through food as your body can't build it from other amino acids.

### Glycine:

- This is the most abundant amino acid in collagen (found in connective tissue), and becomes “conditionally essential” in pregnancy. It forms fetal DNA, internal organs, connective tissue, bones, blood vessels, skin and joints, fuels the growing uterus, placenta and stretching skin.
- The uterus contains 800% more collagen at the end of pregnancy compared to pre-pregnancy. It is an antioxidant and intake is shown to reduce blood pressure and blood sugar.
- It's also important for production of glutathione, one of the body's strongest detoxification enzymes.

### Deficiency Risks:

- Low energy, imbalanced blood sugar, frequent hunger pangs, food cravings (especially for sugar), headaches.
- Increase in child's risk for developing heart disease, high blood pressure, diabetes later in life, low birth weight.



# Macronutrient 3: Fats

**Recommended daily amounts:** Lacking human evidence on what amounts are best, but don't limit "good fats".

## Functions:

- Provide energy, insulates organs, transports vitamins A, D, E and K, necessary for hormone production, building cell structures, making neurotransmitters and immune function
- Brains are 60% fat

## Food sources:

- Animal fat
- Dairy fat (butter, ghee, heavy cream, sour cream, cream cheese etc)
- Plant fats (olives, coconuts, avocados, nuts, seeds)

## "Good fats":

### 1) Saturated fats

- "Saturated" with hydrogen and oxygen atoms, solid at room temperature but melts with heat.
- Food sources: most saturated fats come from animal products as well as coconut, palm and palm kernel oils.
- Protect liver, brain, lung function, hormone production, immune function.
- Previous research saying saturated fats were unhealthy didn't differentiate between naturally occurring saturated fats and artificially produced trans fats.

### 2) Monounsaturated fats

- Liquid at room temp, solid in fridge
- Food sources: olives, avocados, peanuts, sunflower seeds, almonds, nuts
- Reduces risk of heart disease, depression, improves insulin sensitivity, reduced inflammation, increased bone density, reduction in some cancers.



### 3) Polyunsaturated fats

- Liquid even in fridge
- Two essentials: omega-3 and omega-6, which work in balance

#### Omega-3 fats

- Most significant anti-inflammatory nutrient
- Food sources:
  - ALA-sources: flax, canola, chia seeds, walnuts, wheat germ
  - EPA and DHA-sources: fish and seafood
- DHA and EPA can be converted from ALA, but high blood sugars impair this process
- EPA helps DHA move across placenta
- 15-20% of the cerebral cortex is comprised of DHA. When you have low DHA levels, it is replaced with cholesterol and omega-6 which leads to cellular rigidity and lowered transmissions of messages.
- With low omega-3 levels, you are at risk of cardiac arrhythmias, skin issues, poor memory, depression and mood disorders.
- Eating fish twice weekly reduces risk of depression and suicidal ideation.

#### Omega-6 fats

- Pro-inflammatory
- Inhibits synthesis of DHA (Omega-3)
- Food sources:
  - “Vegetable” oils: corn, safflower, soybean, cottonseed, sunflower, sesame seeds
  - Think deep fried foods, margarine, corn oil, etc
  - Nuts, grains and leafy vegetables (remember you do need a balance of the two, so consuming these foods will give a healthy dose of Omega-6)
- With high omega-6 levels, you are at higher risk of cardiovascular disease, cancer, autoimmune diseases, asthma, and mental health diseases.



## **“Bad” fats:**

### **“Partially-hydrogenated” trans fats**

- Type of saturated fat (with a different chemical bond)
- When food companies take liquid vegetable oil and convert to solid
- Food sources: margarine, shortening, processed foods such as fried foods, fast food, doughnuts, cakes, prepared frosting, cookies and pastries. The tiny amounts found in the gut of some animals (meat and dairy) are healthy to eat and contribute to metabolism, heart health and cancer prevention.
- Artificial trans fats don't act like natural fats and increase risks of depression, inflammation and calcification of arterial cells, coronary heart disease, imbalance of cholesterol levels, with increased risk of death from things like stroke, diabetes, cancer.
- Interfere with nutrient-transfer across placenta: associated with lower birth weight, lower placental weight, higher risk of preeclampsia, preterm birth.
- Worsen insulin resistance



# Eat Your Vegetables!!

## Functions:

- High fibre content, low carb/fat/protein content
- Fibre helps slow carbohydrate digestion so blood sugars don't spike as much, acts as fuel for intestinal bacteria, helps prevent constipation.
- Source of micronutrients
- Prebiotic fibres act as a food source to microbiome bacteria

**Sources:** aim for variety of low and moderate starchy veg, as vegetables with high starch content will spike your sugars (also considered high-glycemic index vegetables)

- Low-starchy veg: tomatoes, broccoli, zucchini, asparagus, celery, peppers, etc
- Moderate-starchy veg: carrot, jicama, parsnip, snap peas/snow peas, etc
- High-starch veg is considered a carbohydrate: potatoes, sweet potatoes/yams, squash, green peas, corn



# Fluids

**Recommended daily amounts:** aim for 100oz/ day

**Functions of water:**

- Provides shape and structure to every cell
- Helps regulate body temperature
- Aids in digestion and absorption of nutrients
- Transports oxygen to cells
- Major component of mucous and other lubricating fluids

**Sources:** drinking water, herbal tea, soup

Watch the colour of your urine: should be clear or pale yellow.



# Salt (sodium chloride)

**Recommended daily amount:** salt to taste

**Functions:**

- Electrolytes keep energy levels up (keep heart beating)
- Helps maintain correct blood plasma volume
- Facilitates neural signaling
- Supports normal stomach acid levels (which is necessary to absorb micronutrients)

**Best source:** unrefined sea salt (contains trace minerals, not just sodium)

**Deficiency Risks:** headaches, leg cramps, preeclampsia, intrauterine growth restriction or death, low birth weight, organ underdevelopment and dysfunction.



# Foods to Increase

*“In short, current research finds that the nutrients most commonly lacking in a prenatal diet - like vitamins A, B12, B6, zinc, iron, DHA, iodine and choline - are found in the very foods you are told to limit by conventional prenatal nutrition guidelines.” ~ Lily Nichols, Real Food for Pregnancy*

## 1) Eggs

- Egg yolks are rich in choline: 2 eggs (with yolks) provide half of daily choline recommendation
- Source of DHA
- Choline works with DHA to incorporate it into cells
- High levels of folate, B-vitamins, antioxidants (lutein, zeaxanthin which help with eye and vision development) and trace minerals (iodine, selenium)
- Doesn't contain carbohydrates
- Pasture-raised chicken eggs are much more nutrient-dense than commercially-raised hens
- Food poisoning from eggs accounts for only 2% of all food poisoning cases (8x more likely to get food poisoning from fresh produce)

## 2) Liver

- Besides egg, only other dietary source of choline
- Single richest source of iron
- Richest food source of folate and vitamin B12 (200x more than muscle meat)
- High in fat-soluble vitamins A, D, E and K
- If you can't tolerate the taste of live: buy desiccated liver from grass-fed cows in capsule form

## 3) Meat on the Bone, Slow-Cooked Meat, and Bone Broth

- Bones, skin and connective tissues are rich in protein, gelatin, collagen, glycine and minerals.
- When drinking it as broth, minerals leach into broth and create a natural electrolyte drink.



#### **4) Vegetables, especially leafy greens**

- Concentrated in vitamins, minerals and antioxidants
- High sources of folate, vitamin C, beta-carotene, fibre, many B-vitamins, trace minerals.
- High amounts of vitamin K1, which helps with blood clotting.
- High in B6 and magnesium which help prevent or ease severity of morning sickness
- High levels potassium: key electrolyte helping to maintain blood pressure and prevents swelling
- Eat a combination of cooked and raw

#### **5) Salmon, Fatty Fish, and Other Seafood**

- High in DHA, vitamin D, trace minerals such as iodine, zinc, and selenium
- Study showed women who ate more than 12oz of fish a week had children with higher IQ and communication skills
- Mercury worries are a bit overblown: fish contains selenium that binds to mercury and prevents it from being toxic in body but avoid very high mercury (swordfish, king mackerel, tilefish, shark)
- Limit tuna to <6oz a week
- Size of fish predicts mercury level: the bigger the fish, the older it is and has likely eaten smaller fish, accumulating mercury. The sockeye salmon is smaller and doesn't live as long as albacore tuna.
- Highest levels of DHA: fatty fish such as salmon, herring, sardines (plus fish eggs)

#### **6) Full-Fat and Fermented Dairy Products**

- High levels of calcium, protein, fat-soluble vitamins (A, D, E, K), some vitamin Bs, probiotics and iodine.
- Vitamin K2 (not K1 from plants): works with vitamins A and D to support normal mineral metabolism (puts it into bones and teeth, not soft tissues)

#### **7) Chia Seeds**

- Rich in calcium, magnesium, iron and potassium, omega-3s (not DHA)
- High in fibre, regulate bowel movements (whether you struggle with constipation or diarrhea)
- Chia "gel" slows carbohydrate digestion
- Start with 1 tsp and work up to 1-2 Tbsp per day
- Store in fridge



# Foods to Avoid

*“Improved standards and surveillance have reduced the prevalence of contaminated foods at grocery stores. Therefore, it is no longer necessary for pregnant women to avoid foods like deli meats and soft cheeses (associated with Listeria); soft-cooked eggs (associated with Salmonella); or sushi and sashimi... As general guidelines to food safety, pregnant women should ensure that their food is obtained from reputable establishments; stored, handled and cooked properly; and consumed in a timely manner.” ~ Real Food for Pregnancy, page 60*

## 1) Alcohol

- No safe amount in pregnancy
- One review of 34 studies showed that binge drinking (more than 4 drinks on one occasion) was clearly detrimental to childhood cognition but even mild to moderate drinking (up to 6 drinks a week) may impact children’s behaviour or cognition.
- Some of the harms of drinking are due to the depletion of nutrients as body redirects from baby to detoxification of alcohol (folate, B vitamins, vitamin A, glycine, selenium, zinc, and choline).
- If you plan to consume alcohol in pregnancy, consider extra supplementation of above micronutrients.

## 2) Caffeine

- Aim for maximum of 200mg per day or 16oz of coffee
- Rate of caffeine elimination from bloodstream decrease over course of pregnancy.
- Higher intakes of caffeine can reduce placental blood flow, thereby decreasing nutrient availability to baby.
- Higher intakes have been linked to higher risks of miscarriage, stillbirth, and low birth weight and these studies didn’t have a clear threshold for risk (like alcohol).

## 3) Refined Carbohydrates

- Intake of refined carbohydrates is the number one predictor of a nutrient-deficient diet.
- Grains are less nutritious than traditional food guides suggest.
- Consider replacing typical serving of grains with a serving of vegetables or more protein and you will be guaranteed to consume more micronutrients than come in fortified grain products.



#### **4) Sugar**

- Sugar intake in pregnancy predisposes children to asthma or eczema.
- Sugar displaces more nutritious foods, is addictive, and programs baby to prefer sweeter foods.
- Animal studies showed high sugar intake in pregnancy predisposed children to ADHA-like behaviour, including low attention span and impulsive behaviour.
- 4g of sugar = 1 tsp of sugar (i.e 1/4 cup raisins = 25 g sugar = 6 teaspoons)
- Think about stirring the sugar into water and asking yourself if you would still consume.
- Alter meals if you want to add dessert (i.e eat a low-carb dinner).

#### **5) Artificial Sweeteners**

- Aspartame, sucralose (Splenda), saccharin, acesulfame potassium, neotame
- interact with gut microbiome and kill good bacteria (especially Splenda)
- May impact thyroid hormones
- One study showed that women who consumed artificial sweetener every day were 1.6x more likely to have a baby who was macrosomic and that baby was 1.9x more likely to be overweight or obese at age 7.
- Consider replacing with stevia which does not affect blood sugar levels or sugar alcohols xylitol or erythritol (keep in mind overuse can cause gas and diarrhea).

#### **6) Vegetable Oils**

- Processed “vegetable” oils: canola, soy, corn, safflower, cottonseed
- Easily damaged when exposed to air or heat which creates toxic compounds called free radicals and reactive oxygen species which are associated with pregnancy complications including miscarriage, preterm labour, preeclampsia, and fetal growth restriction.
- High Omega-6:Omega-3 ratio promotes disease development, including cardiovascular disease, cancer, osteoporosis, and inflammatory and autoimmune diseases.
- Check labels of snack foods, mayonnaise, salad dressings and sauces.
- When cooking use saturated fats (i.e animal fats or coconut oil)
- Consider making your own salad dressing with extra-virgin olive oil, avocado oil, macadamia-nut oil etc.



## 7) Trans Fats

- When food companies take liquid vegetable oil and convert to solid
- Food sources: margarine, shortening, processed foods such as fried foods, fast food, doughnuts, cakes, prepared frosting, cookies and pastries. The tiny amounts found in the gut of some animals (meat and dairy) are healthy to eat and contribute to metabolism, heart health and cancer prevention.
- Artificial trans fats don't act like natural fats and increase risks of depression, inflammation and calcification of arterial cells, coronary heart disease, imbalance of cholesterol levels, with increased risk of death from things like stroke, diabetes, cancer.
- Interfere with nutrient-transfer across placenta: associated with lower birth weight, lower placental weight, higher risk of preeclampsia, preterm birth.
- Worsen insulin resistance
- Consider replacing with lard (pork fat), butter, tallow (beef fat) or coconut oil

## 8) Soy

- Interferes with protein digestion
- Inhibits mineral absorption due to phytic acid
- If fermented (miso, natto, soy sauce, tempeh), phytic acid is broken-down and absorption of minerals is better.
- Contains other compounds that interfere with thyroid and other hormone function
- High risk of pesticide glyphosate residue which is used in large-farm production ("Roundup-Ready" GMO soy plants) which is very toxic to developing babies
- In rat studies, maternal exposure to glyphosate caused endocrine problems, behaviour changes and "disturbs the masculinization process" in male offspring.
- Soy often contains aluminum due to leaching from storage containers: shown to cross placenta and is toxic to uterine and placental cells, disturbs levels of neurotransmitters (serotonin and dopamine) in offspring.



# Vegetarian Diet in Pregnancy

The importance of meat in pregnancy cannot be overstated. It contains complete protein, minerals, B-vitamins, and fat-soluble vitamins.

Vegetarians will struggle to get adequate levels of vitamin B12, choline, glycine, retinol (preformed Vitamin A), vitamin K2, DHA, iron and zinc.

Consider an exception during pregnancy, or eating oysters to get your B12, as they don't have a central nervous system and likely don't feel pain. 1 oz of oysters will provide more than the Recommended Daily Allowance.

Because choline acts similar to folate, if you have the common genetic mutation MTHFR (which affects up to 60% of population), choline needs are much higher than recommended daily dose, and it's very hard to get that from vegetarian or egg-free diet.

You will also likely lack adequate levels of glycine. Glycine supplements include sesame seed flour, spirulina, sunflower seed flour, pumpkin seeds, nori, watercress, beans and spinach, but concentrations are still very low compared to meat.

When considering DHA recommendations, consider that deficiencies increase the risk of anxiety and depression. The only way for those who do not eat fish or seafood to get DHA is to consume pasture-raised eggs or a spirulina-algae supplement.

Richest sources of iron: legumes, pumpkin seeds, cooked leafy green vegetables, spirulina.

Richest sources of zinc: whole grains, nuts, seeds and legumes. To maximize absorption, soak, sprout or ferment grains, legumes, seeds and nuts before eating (decreases phytic acid content). Consume all these foods alongside acidic or high vitamin C ingredients (like vinegar or lemon juice) and separate from foods with calcium or tannins (coffee/tea).



# Anemia in Pregnancy

Anemia is rarely due to a lack of iron in our diet, but is most often a lack of other minerals necessary in our body's processes of healthy blood formation. Some even go so far as to say that iron overload is causing a lot of physical disease in today's culture.

When someone has low hemoglobin, I like to focus on copper, zinc and magnesium foods as well as bio-available iron in attempts to raise hemoglobin levels. The key will be eating an ancestral diet on top of any supplements, so that foods can work synergistically to balance our bodies and keep us healthy.

Suggested supplements for anemia:

- Desiccated oyster supplement (i.e Oystermax, Mitolife Oyster)
- Desiccated beef liver
- Magnesium supplement
- Molasses daily (mixed into yogurt, milk, smoothie, tea)
- Algae spirulina
- Spatone Iron Supplement
- Megafood Blood Builder



## Micronutrients in Pregnancy: A to Z

Your body will excrete out excess water-soluble vitamins, but excess fat-soluble vitamins will remain in the body. Take care when supplementing with fat-soluble vitamins not to exceed the levels in this chart.

Nutrient	Function	Food Sources	Deficiency Risks	Daily Requirements
<b>Vitamin A, fat-soluble</b>	<ul style="list-style-type: none"> <li>- Helps develop lungs, kidneys, heart, eyes and other organs of baby</li> <li>- Regulates gene expression</li> <li>- Necessary for vitamin D metabolism</li> </ul>	<ul style="list-style-type: none"> <li>- Focus on <i>preformed vitamin A</i>, or retinol: full-fat dairy, eggs, liver</li> <li>- Plants contain <i>provitamin A</i> or carotenoids, meaning your body has to convert it to retinol to use it, which can be difficult for some</li> <li>- The more beta-carotene you eat (sweet pot/carrots), the less you convert to vitamin A</li> </ul>	Serious malformations (including craniofacial structures, limbs and internal organs)	770 mcg if from capsule, but best from real food as food sources do not lead to toxicity
<b>B6, water-soluble</b>	<ul style="list-style-type: none"> <li>- Helps convert food to energy</li> <li>- Helps create neurotransmitters</li> <li>- Helps prevent/decrease morning sickness</li> </ul>	Green, leafy veg	Miscarraige, preterm birth, low birth weight, low APGAR score	25mg
<b>Folate or B9, water-soluble</b>	Reduced neural tube defects	Green leafy veg		1 mg if higher risk of neural tube defect, 600mcg otherwise
<b>B12, water-soluble</b>	Required for methylation, which is involved in gene expression, cell differentiation and organ formation.	<ul style="list-style-type: none"> <li>- Only found in animal foods</li> <li>- Organ meats have 200 times more B12 than muscle meats</li> </ul>	<ul style="list-style-type: none"> <li>- Preterm delivery, miscarriage, neural tube defects,</li> <li>- While breastfeeding: developmental delays, stunted growth, motor problems</li> </ul>	Usually 2.6mcg in supplements



Nutrient	Function	Food Sources	Deficiency Risks	Daily Requirements
<b>C, water-soluble</b>	<ul style="list-style-type: none"> <li>- Works with amino acids and other nutrients to maintain normal collagen production</li> <li>- Immunity support</li> <li>- Strong amniotic sac</li> </ul>	Green leafy veg		No more than 3000mg in first trimester
<b>D, fat-soluble</b>	<ul style="list-style-type: none"> <li>- Helps increase absorption of Vitamin B and iron</li> <li>- Helps absorb and retain calcium and phosphorus which builds bone</li> <li>- Helps controls infections and reduces inflammation</li> </ul>	90% comes from sun in those who <i>don't</i> supplement	Preeclampsia, low birth weight infant, gestational diabetes, impaired bone development in child	<ul style="list-style-type: none"> <li>- 4000IU, some suggest 7000-8000 IU</li> <li>- Look for D3 (cholecalciferol)</li> </ul>
<b>E, fat-soluble</b>	<ul style="list-style-type: none"> <li>- Antioxidant, helps cells live longer</li> <li>- Makes for strong amniotic sac, helps skin stretch</li> </ul>	<ul style="list-style-type: none"> <li>- Plant-based oils, nuts, seeds</li> <li>- Red bell pepper, asparagus, mango, avocado, beet greens</li> </ul>		Max 15 mg a day
<b>K1, fat-soluble</b>	<ul style="list-style-type: none"> <li>- Helps with blood clotting</li> <li>- Can not be converted to vitamin K2 in any significant way</li> </ul>	green, leafy veg and plant foods		
<b>K2, fat-soluble</b>	<ul style="list-style-type: none"> <li>- Ensures mineralization of calcium happens in bones and teeth, not soft tissues</li> <li>- Increases insulin sensitivity</li> <li>- Necessary for vitamin D metabolism</li> </ul>	Full-fat animal sources (full-fat dairy, eggs, liver) and fermented foods		<p>90mcg</p> <p>Make sure supplement has K2, and is often paired with Vitamin D3</p>



Nutrient	Function	Food Sources	Deficiency Risks	Daily Requirements
<b>Choline, fat-soluble</b>	<ul style="list-style-type: none"> <li>- Acts like folate, fosters good brain development, placental function</li> <li>- Essential fatty acid levels in baby mirror mom</li> </ul>	<p>Egg yolks, liver</p> <p>High-fat dairy helps with fertility, reverse correlation with low-dairy products</p>	Increased risk of neural tube defects	450mg from choline bitartrate or sunflower lecithin
<b>Calcium, mineral</b>	Builds strong bones	Dairy, green leafy veg, broccoli, almonds, sesame seeds, chia seeds, sardines or salmon canned with bones	- Women are rarely deficient in pregnancy	1000mg
<b>Copper, mineral</b>	<ul style="list-style-type: none"> <li>- With iron, forms red blood cells</li> <li>- Maintains healthy bones, blood vessels, nerves, immune function</li> </ul>	Best source is beef liver (100g serving = 488% of copper RDI)	Iron anemia	1.3mg/day, no data on RDI in pregnancy (more needed during lactation)
<b>Iodine, mineral</b>	<ul style="list-style-type: none"> <li>- Normal thyroid function in mom and baby</li> <li>- Essential to baby's brain development</li> </ul>	Fatty fish and seafood	Lower IQ scores in baby, disability, hyperactivity, attention deficit disorders	1110 mcg max
<b>Iron, mineral</b>	<ul style="list-style-type: none"> <li>- Oxygen transport in mom and baby</li> <li>- Good energy levels</li> <li>- Postpartum recovery</li> </ul>	<ul style="list-style-type: none"> <li>- Heme iron, absorbed at about 25% efficiency: liver and organ meats, red meat, game meat, oysters, sardines, dark meat poultry</li> <li>- Non-heme iron, absorbed at 2-13% efficiency: plant sources (fibre, phytic acid and anti-nutrients interfere with absorption)</li> <li>- Use cast iron pans when cooking</li> </ul>	<ul style="list-style-type: none"> <li>- Preeclampsia, hypothyroidism, preterm birth, impaired baby brain development and stunted growth</li> <li>- Baby's lifetime risk of obesity, diabetes and high blood pressure is higher</li> <li>- Impaired thyroid function</li> </ul>	<ul style="list-style-type: none"> <li>- 27 mg, consider taking with vit C to aid absorption</li> <li>- Look for iron bisglycinate (avoid ferrous fumarate/sulfate)</li> <li>- Desiccated liver capsules</li> <li>- Spirulina algae (1500mg) shown to be more effective than iron capsules in treating anemia</li> </ul>



Nutrient	Function	Food Sources	Deficiency Risks	Daily Requirements
<b>Magnesium, mineral</b>	<ul style="list-style-type: none"> <li>- Prevents/aids morning sickness</li> <li>- Necessary for vitamin D metabolism</li> <li>- Reduces risk of high blood pressure</li> </ul>	<ul style="list-style-type: none"> <li>- Green leafy veg, seaweed, pumpkin seeds, Brazil nuts, sunflower seeds, sesame seeds, almonds, cashews, chia seeds, avocados, unsweetened cocoa powder (or dark chocolate), bone broth, green herbs</li> </ul> <p>Try to source these from organic farms as pesticide use causes soil to be magnesium-deficient</p>	<ul style="list-style-type: none"> <li>- Constipation, muscle cramps (legs and uterus)</li> <li>- Predisposition to preeclampsia, especially in presence of calcium excess</li> <li>- Often seen in women with GDM</li> </ul>	<ul style="list-style-type: none"> <li>- Start at 100mg and gradually increase to 300mg</li> <li>- Magnesium glycerinate is best absorbed and less likely to cause GI issues.</li> <li>- If constipated, choose magnesium citrate.</li> <li>- Increase epsom salt bath or foot soaks (magnesium sulfate)</li> </ul>
<b>Zinc, mineral</b>	<p>Necessary for vitamin D metabolism</p>	<ul style="list-style-type: none"> <li>- Readily absorbed form is found most in oysters and next red meat</li> <li>- Plant foods that are high in zinc also contain phytic acid which reduces absorption</li> </ul>	<p>Miscarriage, preterm delivery, fetal growth restriction, stillbirth, neural tube defects</p>	<p>40mg max, consider desiccated oyster supplement</p>
<b>Omega-3 and Fish Oils</b>	<ul style="list-style-type: none"> <li>- Keeps bowels regular</li> <li>- Reduces anxiety/depression</li> <li>- Controls blood pressure</li> <li>- Prevents heart disease</li> <li>- Fetal and brain formation</li> </ul>	<ul style="list-style-type: none"> <li>- Cold water, fatty fish (salmon, herring, sardines, trout, fish eggs, mussels)</li> <li>- Eggs from pasture-raised eggs or fortified with flax (“Omega-3 eggs”)</li> </ul>	<ul style="list-style-type: none"> <li>- Cardiac arrhythmias, skin issues, poor memory, depression and mood disorders.</li> <li>- Impaired fetal brain growth.</li> </ul>	<ul style="list-style-type: none"> <li>- 300 mg DHA minimum, studies have shown benefits with higher doses.</li> <li>- Pick a high-quality fish oil, frill oil, or algae oil that also contains EPA</li> </ul>



Nutrient	Function	Food Sources	Deficiency Risks	Daily Requirements
<b>Probiotics</b>	<ul style="list-style-type: none"> <li>- Balances microbiome in gut, and 80% of immune system lives in gut</li> <li>- Better blood sugar levels</li> <li>- Strains <i>Lactobacillus reuteri</i> and <i>Lactobacillus rhamnonus</i> have been shown to reduce rates of GBS colonization as they support favourable microbial balance in vagina</li> </ul>	<ul style="list-style-type: none"> <li>- Fermented foods: sauerkraut (1 Tbsp of the juice has 1.5 trillion colony forming units), kefir, yogurt, aged cheese, kimchi, pickled veg, raw apple cider vinegar, kombucha, miso, atto.</li> <li>- Ensure it's all unpasteurized or else bacteria is killed in process.</li> </ul>	<p>Imbalanced microbiome may increase risk of preterm birth, preeclampsia, gestational diabetes, excessive weight gain</p>	<p>Look for a supplement containing at least 30 billion CFU with both <i>Lactobacillus</i> and <i>Bifidus</i> strains</p>
<b>Gelatin or Collagen</b>	<ul style="list-style-type: none"> <li>- Sources of amino acid glycine, which forms fetal DNA, internal organs, connective tissue, bones, blood vessels, skin and joints, fuels the growing uterus, placenta and stretching skin</li> </ul>	<ul style="list-style-type: none"> <li>- Connective tissues, bones and skin of animal</li> <li>- Bone broth, slow-cooked meat, poultry with skin, cracklings or pork rinds, meat on the bone</li> </ul>		<p>Pure collagen or gelatin powder mixed into foods or coffee (try to get from pasture-raised/grass-fed animals)</p>



# Meal Planning Tips

- Eat an ancestral diet (animal-based, head-to-tail, regional produce in season, fermented foods, etc)
- Most women will feel better if they eat small meals and more snacks throughout the day, as it stabilizes blood sugar, reduces portion sizes at meals, and provides constant supply of nutrients to baby.
- Vegetables and protein options should be central to meal; vegetables should fill half of plate, proteins/fats  $\frac{1}{4}$ , remaining  $\frac{1}{4}$  carbs.
- General breakdown: 2+ cups vegetables with some fat, 3-4 oz protein,  $\frac{1}{2}$  to 1 cup starchy veg or carb-rich whole foods but eat to satiation
- Bone broth and slow-cooked meats have high levels of glycine
- Keep bacon fat, pork fat (lard), beef fat (tallow) to cook with
- Eat chicken with the skin on
- Don't trim fat off steak
- Don't cook plant oils at high temps as heat damages fats
- Don't eat "naked carbs": always pair carbs with a protein/fat
- Incorporate eggs into breakfast
- Consider soaking or sprouting beans, seeds, and legumes to reduce phytic acid, add to salads, sandwiches, etc



## Grocery Shopping Tips

- Buy crackers made with “low-glycemic index” carbs, such as nut and legume flours
- Buy an assortment of animal products to get all your amino acids and micronutrients
- Grass-fed, pasture raised animal products will have higher levels of micronutrients and lower levels of pesticides
- Avoid store-bought salad dressings (“bad” fats) and make your own at home
- Buy butter not margarine
- Buy full-fat dairy products
- Purchase extra virgin oils in dark glass bottles (not clear plastic) as fats are damaged by light
- Purchase (or better yet grow) a variety of colourful vegetables
- Purchase wild-caught fish as much as possible
- Buy organically-grown vegetables if possible, to minimize pesticide exposure
- Shop at local farmer’s markets to eat in season, fruits and veg will be most nutrient-dense



# Pregnancy Tea Infusion

This is a pregnancy infusion I recommend all my clients initiate in the first trimester. Some have heard that Red Raspberry Leaf should be avoided in first trimester due to possibly causing uterine contractions, but these herbs work synergistically and any risks of theoretical miscarriage are negated. That said, waiting until the second trimester to initiate this tea is entirely reasonable.

To make an infusion, bring filtered water to just before a boil, pour over the herbs, then immediately cover with a lid and let it sit overnight. Aim to drink 2-3 cups a day. Makes a delicious iced tea with honey or maple syrup.

<b>Alfalfa, 1 parts</b>	<ul style="list-style-type: none"><li>• High in vitamin K: helps prevents postpartum hemorrhage</li><li>• High in potassium, calcium, magnesium, iron, vitamin E, vitamin C</li><li>• Helps with immunity, morning sickness, lowering blood pressure, improving digestion</li></ul>
<b>Red Raspberry Leaf, 2 parts</b>	<ul style="list-style-type: none"><li>• Can reduce labour time and pain felt overall</li><li>• High in magnesium, calcium, vitamin C, and antioxidants that reduce inflammation</li></ul>
<b>Oat straw, 1 parts</b>	<ul style="list-style-type: none"><li>• High in calcium</li><li>• Contains vitamins B, D, D, E, K, magnesium, silica</li><li>• Nervous exhaustion, anxiety, fear and insomnia</li></ul>
<b>Nettle, 2 parts</b>	<ul style="list-style-type: none"><li>• Strengthens kidneys</li><li>• Supports liver function</li><li>• Raises vitamin K and hemoglobin</li><li>• High in iron</li><li>• Diuretic for edema</li></ul>



# Herbs to Avoid in Pregnancy

The following herbs should be avoiding, besides the non-therapeutic levels used in cooking.

- Tansy
- Safflower
- Rue
- Mugwort
- Yarrow
- Angelica
- Wormwood
- Pennyroyal
- Oregano
- Sage
- Thyme
- Borage
- Barberry
- Hops
- Goldenseal
- Oregon Root
- Rhubarb
- Buckthorn
- Red Clover
- Poke Root



## References

**Baker, Heather.** Home Birth On Your Own Terms: A How To Guide for Birthing Unassisted. 2nd Edition. January 2021.

**Nichols, Lily.** Real Food for Pregnancy. 2018.

