

## **Stock vs. Broth: Are You Confused?**

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French chefs have a term *fonds de cuisine*, which translates “the foundation and working capital of the kitchen.” Bone and meat stock provide just that, the foundation of both the kitchen and ultimately one’s physical health. One of the most common questions that those individuals embarking upon the GAPS Diet™ have is “Do I make stock or broth?” What is the difference between the two? The two words are often used interchangeably by the most educated of chefs. For the purpose of the GAPS Diet™, Dr. Natasha Campbell-McBride uses the terms “meat stock” and “bone stock.” In this paper, I will use “meat stock” when referencing meat stock and “bone broth” for bone stock.

Meat stock, rather than bone broth, is used in the beginning stages of the GAPS Diet™, especially during the Introduction Diet where the primary focus is healing the gut. Bone broth is ideal for consuming once gut healing has taken place. The significant difference is that the meat stock is not cooked as long as bone broth. Meat stock is especially rich in gelatin and free amino acids, like proline and glycine. These amino acids, along with the gelatinous protein from the meat and connective tissue, are particularly beneficial in healing and strengthening connective tissue such as that found in the lining of the gut, respiratory tract, and blood/brain barrier. These nutrients are pulled out of the meat and connective tissue during the first several hours of cooking meaty fish, poultry, beef and lamb. The larger the bones, the longer the recommended cooking time.

Bone broth, the longer cooked bones without the meat, is a superior source for minerals, as well as for the same amino acids found in meat stock. The amino acids (with the exception of histidine) are present in higher amounts in bone broth. For certain individuals with leaky membranes in the gut and brain, the high concentration of glutamic acid may be problematic. Some people, including autistic children, have impaired liver function that causes the accumulation of ammonia in the blood and brain. Liver disease-associated brain damage has been linked to the accumulation of ammonia. In recent years, studies have shown that excess glutamine aggravates this condition and can cause brain inflammation.

Russell Blaylock, M.D. advises that those with ADHD, autism, multiple sclerosis and other neurological disorders avoid excessive amounts of glutamates.<sup>1</sup> Free glutamates include not only MSG but also glutamine and glutamic acid. These can potentially have a damaging effect on neurons in susceptible individuals. This is why I do not recommend using nutritional formulas containing glutamine in cases of the above-mentioned conditions, as well as Crohn’s or Leaky Gut Syndrome.

Gelatin, a major component of meat stock, also assists in the proper digestion of proteins ensuring optimal growth in infants and children. Gelatin improves the integrity of collagen, which is reflected in the improved appearance of the skin as well as in the lessening of digestive tract inflammation. Additionally, gelatin enhances the digestibility of grains and legumes cooked in it. Both grains and legumes are eliminated in the beginning of the GAPS Diet™, with grains avoided completely until one is ready to transition off the GAPS Diet™. Once gut healing is complete and the digestive tract function is restored, properly prepared grains and legumes will be best enjoyed prepared using meat stock or bone broth.

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<sup>1</sup> <http://articles.mercola.com/sites/articles/archive/2004/05/01/glutamine.aspx>

Bone broth is introduced after the Introduction Diet when gut healing has advanced. Some with longstanding gut issues find that if they introduce bone broth early, prior to the healing and sealing of the gut, they have reactions to the free glutamates that result from the longer cooked gelatin. Those who are sensitive to MSG will generally be sensitive to these free glutamates until their guts are healed. The timing on when a GAPS person is ready to progress to bone broth varies from individual to individual. Those children who are autistic or ADD/ADHD and those who are suffering from seizures, Tourettes or tics are among the people who should avoid free glutamates until their guts are healed and sealed. Once the gut is healed and sealed and the liver is working efficiently, these sensitivities typically go away. The formation of free glutamates can be too excitatory for many sensitive individuals.

Uncomfortable die off reactions, as well as symptoms of nervous system agitation, are signs that the digestive tract is best served staying with the meat stock. Die-off reactions can include diarrhea, vomiting, nausea, constipation and skin eruptions or rashes. Die-off symptoms can be managed or minimized by using old-fashioned therapies like castor oil packs and Epsom salt baths. Making the transition gradually from meat stocks to bone broth is advisable. Cooking meat stock and bone broth at a very low temperature (slow simmer) will minimize the formation of free glutamates.

<b>Comparative Analysis of Amino Acids in Short Cooked Chicken Meat Stock and Long Cooked Chicken Bone Broth Serving Size 8 fl. oz.</b>		
<b>Amino Acids</b>	<b>Meat Stock short cooked</b>	<b>Bone Broth long cooked</b>
Aspartic Acid	161 mg	553.33 mg
Threonine	70.33 mg	214 mg
Serine	85.67 mg	242.67 mg
Glutamic Acid	366.67 mg	1,013.33 mg
Proline	242.33 mg	986.67 mg
Glycine	450 mg	1,773.33 mg
Alanine	214.33 mg	773.33 mg
Valine	63.67 mg	181 mg
Isoleucine	43 mg	131.67 mg
Leucine	92.33 mg	276.33 mg
Tyrosine	34 mg	76.33 mg
Phenylalanine	56.67 mg	192.33 mg
Lysine	127.67 mg	303 mg
Histidine	98.67 mg	93.67 mg
Arginine	170.67 mg	696.67 mg
Cystine	<23.77 mg	<24.03 mg
Methionine	26.13 mg	96.33 mg

*Lab analysis performed by Covance Laboratories, Madison, Wisconsin. For sake of comparison, both formulas used organically raised chickens from Mary's. I had the bone broth analyzed for lead and levels were found to be >1.67 ppb, well within acceptable levels.*

There has been much speculation regarding the mineral content of bone broth. It has wrongfully been assumed in many instances that bone broth is naturally high in calcium. Actually this has proven not to be the case. There is ample antidotal evidence of expedited bone healing with the addition of generous consumption of bone broth but based on recent lab analysis it must be

assumed that the bone healing power of bone broth has more to do with the synergistic aspects of all the minerals and amino acids and other nutrients present in bone broth. Further research is warranted to fully understand the positive and undeniable influence bone broth has on healing fractures and breaks in bones.

<b>Minerals</b>	<b>Bones &amp; Veggies Broth*</b>	<b>Raw Milk**</b>
Calcium	6.14mg	260-306.25 mg
Copper	<0.0298 mg	0.02375-0.1425 mg
Iron	<0.119 mg	0.07-0.1425 mg
Magnesium	5.20 mg	21.25-32.50 mg
Manganese	0.024 mg	0.00475-0.01175 mg
Phosphorus	19.5 mg	212.50- 235 mg
Potassium	94.3 mg	260-400 mg
Sodium	57.5 mg	82.50-212.50 mg
Zinc	0.0517 mg	0.47- 1.415 mg

\*Lab analyses were performed by Covance Laboratories in Madison, Wisconsin.

\*\*Source: [www.raw-milk-facts.com](http://www.raw-milk-facts.com)

In *Gut and Psychology Syndrome* Dr. Campbell-McBride explains how to prepare meat stock to be used during the GAPS Introduction Diet. Her recipe can also be found at the end of this article. Stock prepared in this way supports good digestion, as well as promotes proper secretion of hydrochloric acid, which is needed for breaking down proteins in the stomach. Lack of adequate hydrochloric acid can lead to a myriad of symptoms including acid reflux, skin disorders, anemia, osteoporosis, rheumatoid arthritis, vitiligo, asthma, food allergies and more.

Excellent bone broth recipes can be found in Sally Fallon's *Nourishing Traditions*. This timeless cookbook should be in every kitchen. Broth is an invaluable addition to the diet of young children and all who desire optimal health. Broth is rich in minerals useful for building strong teeth and bones. Broth should serve as a very important part of the diet, especially for those who are lactose intolerant, although it is not a key source of calcium. In most cases we find that once the gut is healed, raw milk is well digested. Regardless, once homemade broth is introduced it will be a welcomed staple to your diet.

Both stock and broth can be made from the same bones. It is simple to begin your stock and after cooking for several hours, remove the carcass for deboning. Reserve the meat for eating and then return the bones to a new pot with fresh water. Continue cooking for 6 to 48 hours, depending upon the type of bones. Stock and broth can be stored in the refrigerator for several days with the layer of fat on top to prevent oxidation or frozen in the freezer for several months. Unused stock or broth in the refrigerator may be reheated, cooled and returned to the refrigerator for several more days before consuming.

Meat stock and bone broth add valuable nutrients and flavor to every meal. For those who have experienced gut healing from the GAPS Introduction Diet, both should be enjoyed freely and often. As every experienced chef knows, stock and broth add a welcomed savory taste to meats, grains, legumes and vegetables as they stimulate the appetite and supports good digestion. Bon appétit!

## Meat Stock Recipes

adapted from *Nourishing Traditions* by Sally Fallon

### Fish Meat Stock

*2 medium non-oily fish, such as sole or snapper*

*4 or more quarts of purified water*

*2 tablespoons raw apple cider vinegar*

*Assortment of vegetables, as desired*

- *1-2 medium yellow onions*
- *2-4 carrots*
- *3-4 celery stalks*

*Bouquet garni (tie together using cooking twine)*

- *fresh bay leaf*
- *fresh thyme, rosemary, sage*

*Celtic sea salt, 1-2 teaspoons, to be added in the last 10 minutes of cooking*

*Parsley, to be added in the last 10 minutes of cooking*

Rinse fish in purified water. Remove meat from the fish and reserve for cooking. Place bones, fins, tails, skin and heads in the pot. Add remaining ingredients. Fill pot with purified water. Allow the pot and its contents to stand for 30 minutes, giving the raw apple cider vinegar time to draw minerals out of the bones. Bring to a boil. Reduce the heat to a simmer, remove scum that has risen to the surface and cook for 1 to 1 ½ hours. Add parsley and salt during the last 10 minutes of cooking. Remove the fish bones and save to be used for bone broth. Once stock has cooled pour into containers for refrigerating or freezing. Glass is ideal for storing food. If freezing in glass, be sure to leave 2 inches of air space between the top of the liquid and the lid. When defrosting frozen stock do not run hot water over frozen glass.

### Chicken, Pheasant or Turkey Meat Stock

*1 whole chicken, pheasant or turkey*

*or 3 pounds of boney chicken parts, such as necks, backs, wings and breastbones*

*2-4 chicken, pheasant or turkey feet, optional*

*1-2 chicken, pheasant or turkey heads, optional*

*4 or more quarts of purified water*

*2 tablespoons raw apple cider vinegar*

*Assortment of vegetables, as desired*

- *1-2 medium yellow onions*
- *2-4 carrots*
- *3-4 celery stalks*

*Bouquet garni (tie together using cooking twine)*

- *fresh bay leaf*
- *fresh thyme, rosemary, sage*

*Celtic sea salt, 1-2 teaspoons, to be added in the last 10 minutes of cooking*

*Parsley, to be added in the last 10 minutes of cooking*

Rinse chicken, feet and heads in purified water. Cut whole chicken in half down the middle lengthwise. Place these in the pot. Add remaining ingredients. Fill pot with purified water. Allow the pot and its contents to stand for 30 minutes, giving the raw apple cider vinegar time to draw minerals out of the bones. Bring to a boil. Reduce the heat to a simmer, remove scum that has risen to the surface and cook for 1 ½ to 2 hours. Add parsley and salt during the last 10 minutes of cooking. Remove the chicken to debone, reserving the bones for bone broth. Return chicken meat and cartilaginous parts back to into the meat stock. Once stock has cooled, pour into containers for refrigerating or freezing. Glass is ideal for storing food. If freezing in glass, be sure to leave 2 inches

of air space between the top of the liquid and the lid. When defrosting frozen stock do not run hot water over frozen glass.

### **Beef or Lamb Meat Stock**

*4-5 pounds of bone marrow and knuckle bones*

*3 pounds of meaty ribs or neck bones*

*1 calf's foot, if available, cut into pieces (optional)*

*4 or more quarts of purified water*

*2 teaspoons Celtic sea salt*

*4 ounces raw apple cider vinegar*

*Assortment of vegetables, as desired*

- *1-2 medium yellow onions*
- *2-4 carrots*
- *3-4 celery stalks*

*1 teaspoon dried peppercorns, crushed*

*Bouquet garni (tie together using cooking twine)*

- *fresh bay leaf*
- *fresh thyme, rosemary, sage*

*Parsley, to be added in the last 10 minutes of cooking*

Place the bones, meat and joints into a large pot. You may roast the meaty bones in a pan in an oven at 350 degrees Fahrenheit. You may roast the meaty bones in a roasting pan until well browned, for extra flavor. Place these in the pot. Add remaining ingredients. Fill pot with purified water. Allow the pot and its contents to stand for 60 minutes, giving the raw apple cider vinegar time to draw minerals out of the bones. Bring to a boil. Reduce the heat to a simmer, remove scum that has risen to the surface and cook for 3 to 4 hours. Add parsley during the last 10 minutes of cooking. Remove the bones, returning meat to the meat stock. Reserve the bones for bone broth. Once stock has cooled pour into containers for refrigerating or freezing. Glass is ideal for storing food. If freezing in glass, be sure to leave 2 inches of air space between the top of the liquid and the lid. When defrosting frozen stock do not run hot water over frozen glass.

*Additional ingredients to consider for variety would be garlic, ginger and lemon rind, to name a few. Avoid adding starchy vegetables to your stock.*

## **Bone Broth (Bone Stock) Recipes**

To make bone stock (broth) you may follow the above recipes, adding new vegetables and additional joints, raw apple cider vinegar and purified water and continue cooking time according to these recommendations:

### **Fish Bone Broth**

Simmer for 4 hours.

### **Chicken, Pheasant or Turkey Bone Broth**

Simmer for 12 to 24 hours.

### **Beef or Lamb Bone Broth**

Simmer for 48 to 72 hours.