

Cooking a low-salt meal: the ultimate culinary challenge

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It is unlike me to turn down an offer, especially one involving the state of a man's kidneys. So when asked recently if I would cook a low-salt meal for my grandfather-in-law, who is living with congestive heart failure, I immediately accepted the invitation. An amateur cook of healthy dishes, I have defied the culinary averages by successfully preparing meat-free, dairy-free, fat-free, gluten-free, sugar-free, eggless, low-carb, and even chocolate-free-chocolate (yes, that's right) recipes over the years. But low-salt? Never. In the face of my new challenge, my achievements in the kitchen did not prepare me in the least for what lay ahead.

It is well established that a high-salt diet is associated with hypertension, diabetes, and kidney injury. While sodium is needed for the balance of fluids, and nerve and muscle activity in the body, getting enough is rarely a problem in first-world countries. The opposite, in fact, is true; while the daily recommended limit of sodium in the United States ranges from 2400 to 5800 mg,¹ Americans eat an average of 4000 to 5000 mg a day. For comparison, the recommended intake limit of sodium in the United Kingdom is 1600 mg per day,² about half the lowest limit recommendation in the United States.

The main culprit of high salt consumption in America is the excessive amounts added to processed foods. From hamburgers to canned soup, processed foods are a favorite pastime of Americans (Table 1). Determined to lure my grandfather-in-law, affectionately known as Poppop, away from the salt land mine of processed foods, I set out to find the ingredients for low-salt lasagna at the grocery store. How complicated could it be? I just needed pasta, tomato sauce, low-salt cheese, and vegetables.

Not so simple. As I examined the labels, I found that most brands of jarred tomato sauce have 400 mg of sodium in ½ cup, whereas canned tomatoes have 120 to 190 mg of salt in ¼ cup. Organic, diced tomatoes, while beating the competition with their chemical-free production, failed to deliver in the low-sodium department, with 250 mg of sodium in ¼ cup. As I poked around on the shelf, reaching for other brands, at last I found an Italian brand,

Table 1 | High-salt foods

Item	Quantity	Salt content (mg)
Dehydrated onion soup mix	1 packet	3132
Table salt	1 tsp	2325
Sandwich with cold cuts	1, 6 inches	1651
Spaghetti sauce	1 cup	1203
Canned chicken noodle soup	1 cup	1106
Cheeseburger (fast food)	1	1108
Potatoes au gratin	1 cup	1061
Pickle	1	833
Teriyaki sauce	1 tbs	690
Vegetable juice cocktail	1 cup	653
Beef or pork salami	2 slices	604

Tuttorosso tomato puree, with a mere 15 mg of sodium in ¼ cup! (Now, you might ask: Why not make tomato sauce from scratch without salt? As the working mother of a one-and-a-half-year-old, I believe I represent a formidable section of the American population who are too busy to stew tomatoes by hand for an hour.)

As for the pasta, it went without saying that I would use whole wheat lasagna noodles, since whole grains convert to less glucose in the body than processed white flour. Fortunately, store-bought pasta contains no added sodium. I grabbed a box and headed for the dairy section.

Arriving there, I noted that most cheeses have approximately 200 mg of sodium per ounce. After hunting down the low-salt cheese section, I dug into the pile of low-everything cheeses on the elusive bottom shelf at the back of the store. Most brands that advertised themselves as low-sodium had rather unimpressive amounts of 120 to 180 mg of salt per ounce. Then I spotted Alpine Lace Swiss cheese, with only 35 mg per ounce.

Next, I picked up a plump onion, a firm clove of garlic, and one bunch of fresh oregano (all of which have next to no sodium). My strategy was to replace salt with an abundance of flavorful herbs and spices.

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Table 2 Low-salt legume lasagna	
3 cups low-salt tomato puree	<p>Preheat the oven to 350 degrees. Bring water to a boil in a medium-size pot. Insert the lasagna noodles into the water, one by one, then put 1 tsp of oil in the water to prevent sticking. Bring the water to a boil, then lower to medium heat. Boil for 10 minutes, mixing the noodles carefully with a fork every 3 minutes.</p> <p>Meanwhile, put 2 tbsp of oil in a large saucepan and place on high heat for 1 minute. Add the onion and pepper and sauté for 2 minutes, until the onions are nearly translucent. Add the peas, green beans, edamame, oregano, and garlic, then lower to medium heat. Place ¼ cup of water from the boiling pasta into the saucepan, stir, then cover and cook for 5 minutes. Remove the pasta from the stove and drain. Uncover the vegetables and add the tomato puree. Stir, then cover again and cook for 5 minutes.</p> <p>Brush the bottom and sides of a 7"× 11" baking pan with 1 tsp of olive oil. Place 3 noodles on the bottom of the baking pan, overlapping slightly. Add one-third of the vegetable/sauce mixture and one-quarter of the cheese. Place 3 noodles on top, then one-third of the vegetable/sauce mixture and one-quarter of the cheese. Repeat this process one more time, but place the rest (half) of the cheese on top. Place in the oven. Bake for 30 minutes, or until the cheese is well melted and crispy on the edges of the pan. Remove from the oven, and let cool for 10 minutes before serving. Can freeze for up to 3 months. Makes 6 servings. Total salt per serving: 97 mg.</p>
9 pieces whole wheat lasagna noodles	
10 ounces low-salt cheese, grated	
1 medium white onion, peeled and finely diced	
1 cup fresh or frozen organic peas	
1 cup fresh (cleaned and cut in half) or frozen organic green beans	
1 cup frozen edamame	
6 cloves garlic, crushed then diced	
2 tbsp fresh oregano, finely diced	
2 tbsp plus 2 tsp organic extra virgin olive oil	
1 tsp ground black pepper	
8 cups tap water	

Lastly, I needed vegetables. I had previously looked up the sodium content of vegetables online³ to make sure I wasn't unwittingly dumping extra sodium into my otherwise well-thought-out dish. Common leafy greens, such as spinach and broccoli, are relatively high in sodium, with 24 mg in a cup. So I chose to use two legumes with low sodium content (4 mg per cup): peas and green beans. I decided to sneak in edamame (soybeans) as well. Despite having a relatively high amount of sodium (20 mg per cup), soy is known to prevent hypertension and cardiovascular disease⁴ by decreasing serum concentrations of cholesterol and triglycerides.⁵

At last, I hit the kitchen. This recipe (Table 2) reflects an attempt at low-salt lasagna that is good enough to swallow.

Poppop ate the entire dish. He said that it tasted very good, but his words may have been those of a well-mannered man who was merely

flattering his granddaughter-in-law, since he knows what's good for him. Poppop watches his salt intake closely—he tries to eat no more than 200 mg a day.

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