



References:

- Batiha GE-S, Beshbishy AM, Wasef LG, et al. Chemical constituents and pharmacological activities of garlic (*Allium sativum* L.): a review. *Nutrients*. 2020;12,872.
- Cherry R. *Garlic, an edible biography*. Roost Books; 2014.
- NDSU Extension – Food and Nutrition, www.ag.ndsu.edu/food. Various pages on garlic. Accessed Spring 2024.



All About GARLIC!

Pocket Guide

NDSU EXTENSION

NDSU EXTENSION EXTENDING KNOWLEDGE >> CHANGING LIVES

Julie Garden-Robinson, Ph.D., R.D., L.R.D.
NDSU Extension Food and Nutrition Specialist
Rebecca West, Ph.D., Program Assistant

Funding for this project was made possible by the U.S. Department of Agriculture's Agricultural Marketing Service through grant 22SCBPND238. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.

NDSU Extension does not endorse commercial products or companies even though reference may be made to tradenames, trademarks or service names.

For more information, see www.ag.ndsu.edu/food

County commissions, North Dakota State University and U.S. Department of Agriculture cooperating. NDSU does not discriminate in its programs and activities on the basis of age, color, gender expression/identity, genetic information, marital status, national origin, participation in lawful off-campus activity, physical or mental disability, pregnancy, public assistance status, race, religion, sex, sexual orientation, spousal relationship to current employee, or veteran status, as applicable. Direct inquiries to Vice Provost, Title IX/ADA Coordinator, Old Main 100, 701-231-7708, nds.u.eoaa@ndsu.edu. This publication will be made available in alternative formats for people with disabilities upon request, 701-231-7881. 2.1M-7-24

Preparing Fresh Garlic

- To quickly peel garlic, heat it in the microwave for a few seconds. The peel will magically loosen.
- Loosen the paper-like skin from garlic by laying the clove under the flat side of a large knife. Tap the knife once, then slice off the stem end before mincing.
- Chop, mince or crush garlic using a sharp knife. The finer you chop the garlic, the more flavor you will release.
- Once you have a peeled and stemmed garlic clove, smash it more thoroughly against a cutting board, then mince the smashed garlic into bits.
- Tools of the trade: use the latest gadget called a garlic rocker or the traditional garlic press to mince garlic.
- Make garlic paste by mashing peeled and stemmed garlic cloves with a little salt with the end of your kitchen knife on a cutting board; alternatively, mash garlic cloves with salt in a mortar with pestle.
- Do not wash garlic cloves until ready to use, or the moisture will promote mold growth.

Remove the smell of garlic from your hands by rubbing them on a cut lemon, or wet hands and rub them on stainless steel.



Storing Fresh Garlic

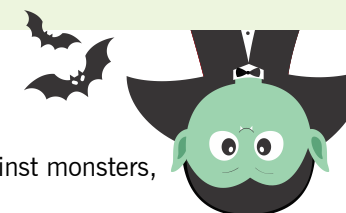
- To store fresh garlic, keep the cloves intact with the bulb head and store in a cool, dry, dark location in a mesh bag or in a garlic keeper.
- Store in a well-ventilated area, and do not seal in plastic.
- Garlic may keep its quality for three to six months in the right conditions or in the refrigerator if your kitchen or other storage area is very warm.
- If the cloves begin to shrivel or sprout, that does not necessarily mean the garlic is bad but that it is no longer at its peak quality. The green-colored sprout may be bitter, so remove before preparation.
- Garlic can be frozen by placing the whole bulb, individual cloves or peeled, chopped cloves in a single layer in a plastic freezer bag. Or try flash freezing by placing whole or chopped cloves on a parchment-lined tray and placing the tray in the freezer. After they're frozen, seal the frozen garlic in a freezer bag. Use frozen garlic within three to four months for best flavor.

Did you know...?

- Garlic is part of the allium family that includes onions, leeks, scallions and shallots.
- Garlic is not pollinated; it is grown from cloves.
- Colloquial names for garlic are Russian penicillin, Bronx vanilla and Italian perfume.
- Garlic was used in the three major healing systems: Indian Ayurveda, traditional Chinese medicine and European medicine.
- An annual garlic festival is held in Gilroy, Calif., every year.
- Koreans are the leading consumers of garlic, eating 22 pounds per person per year, while Americans eat 2.5 pounds.
- Japanese cuisine does not use as much garlic as other Asian cuisine. Instead, garlic is used for its potential medicinal value.

Folklore Fun (NOT Facts!) about Garlic

- Garlic is a folk preventive against monsters, including vampires.
- Athletes have used garlic to bring good luck in competitions.
- During the plague, garlic was used to ward off disease and was carried in posies.
- Love spells used garlic to attract one's beloved.



Research Notes

Garlic (*Allium sativa* L.) is an aromatic herb used in cooking food as well as in traditional remedies in medical applications. It possesses numerous biological properties for human health: anticarcinogenic, antioxidant, anti-inflammatory, antidiabetic, renoprotective (kidney), cardioprotective, antiatherosclerotic, antibacterial, antiviral, antifungal and antihypertensive, among others. Garlic stimulates the production of nitric oxide and increases blood flow.

Garlic is rich in sulfur-containing plant components, namely alliin, allicin and ajoene, along with flavonoids such as quercetin. Garlic comes in many forms: raw, cooked, powder, granules or flakes, oil, and aged garlic extract dietary supplements. Activate garlic's potency by smashing a raw garlic clove and allowing it to sit for a few minutes before ingesting or cooking.



Safety Warning for Garlic-flavored Oil

Do not store garlic in oil at room temperature. Garlic may contain *Clostridium botulinum* spores from the soil. In the right conditions, the spores can produce the deadly botulism toxin. Therefore, if you flavor oil with garlic, store the mixture in the refrigerator or freezer. Use the refrigerated mixture within a week.

Adding Garlic to Favorite Recipes

- Crush or mince fresh garlic and add to soups, stews or chilis.
- Add minced garlic to your favorite salad dressing recipe, or simply add to a bottled dressing.
- Make a simple vegan aioli by adding to an electric blender equal parts plant-based milk and olive oil with minced garlic. Season with prepared mustard, red wine vinegar, fresh or dried herbs, and salt and pepper. A few drops of pure maple syrup may be added for a hint of sweetness.
- Add sliced garlic to any stir-fry recipe or minced garlic to a stir-fry sauce.
- Add fresh garlic, garlic powder or garlic flakes to your favorite spaghetti sauce, sloppy joes, taco meat or jarred salsa.
- Garlic may be added to ready-to-eat deli salads or cowboy caviar.
- Dip fresh slices of French bread in extra virgin olive oil infused with freshly minced or pressed garlic, along with red wine or other aromatic vinegar, minced parsley, dried red pepper flakes and sea salt. Marinate cold boiled shrimp with this mixture for an appetizer.

- Garlic powder may be added to any gravies or sauces.
- Throw whole, unpeeled garlic cloves into any homemade stock along with other vegetables; strain, then use in recipes or freeze in batches.
- Use whole, unpeeled or peeled garlic cloves along with mirepoix (celery, carrot, onion) and whole chicken to make chicken soup or broth. Strain to freeze broth in 1- to 2-cup containers.
- Use smoked garlic during grilling season. If you don't have a smoker, ask a neighbor to smoke some for you. Roast smoked garlic or use as you would regular garlic.





Basic Garlic Butter

½ c. softened unsalted butter
1-2 tsp. minced fresh raw garlic, or more to taste
Salt and pepper to taste

Blend butter and minced garlic with a spoon or mash with a fork. Transfer to a tightly sealed jar or plastic container and store in fridge for up to two weeks. When ready to use, let soften at room temperature to make garlic bread or toast, or spread on meat, mix with

mashed potatoes or melt over steamed vegetables. If using salted butter, do not add extra salt. If cooking with garlic butter, put a little vegetable oil in the pan first, or the butter and garlic may burn easily.

*Fresh Herbs Option

In addition to butter, garlic, and salt and pepper, add the following:

2 Tbsp. finely chopped fresh parsley, fresh basil or other fresh herb of choice
2-3 tsp. fresh lemon juice

Blend all ingredients and form into a roll. Wrap tightly in plastic wrap and freeze up to six months. Slice and use as desired.

Makes eight servings. Each serving has 100 calories, 0 g carbohydrate, 12 g fat, 0 g fiber and 0 mg sodium.

Recipe may be easily doubled.



Basic Roasted Garlic

4 whole garlic bulbs, unpeeled
2 Tbsp. olive, canola or other oil
¼ tsp. salt

*Optional seasonings:

1 tsp. Italian seasoning, crushed between palms of hand to release oils
½ tsp. black pepper
¼ tsp. paprika

Preheat oven to 375 F. Peel outer layers of garlic but leave the bulb intact.

It's OK if some of the tighter peels on garlic cloves remain. Cut ¼ to ½ inch off the top of garlic bulb/cloves, still leaving the bulb intact. Place the garlic

bulbs cut-side-up on a large piece of foil; drizzle olive oil over each bulb and sprinkle with salt. Wrap garlic bulbs in foil and place on a baking sheet. Roast until the garlic is soft and has a light caramel color, about 45 minutes. Allow to cool before squeezing garlic out of bulbs, from bottom to top. Mash the cloves in a small bowl with a fork until they are the desired consistency. Use in recipes, such as Mashed Potatoes with Cauliflower included in this guide, or as a spread.

***Optional seasonings:** After mashing the cloves in a small bowl, add optional seasonings and stir. Add to salad dressings, sandwiches or meat dishes.



Powder vs. Fresh

1 fresh garlic clove = 1 tsp. garlic powder

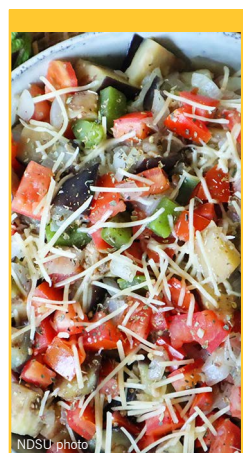


Roasted Parmesan Garlic Potatoes

2 large red potatoes
1 large russet potato
1 large sweet potato
1 medium red onion
2 Tbsp. olive, canola or other oil
2 Tbsp. unsalted butter, melted
5 cloves garlic, minced
1 tsp. dried thyme
½ tsp. dried oregano
½ tsp. dried basil
¼ cup freshly grated Parmesan, reserve some for garnish
⅛ tsp. salt
⅛ tsp. pepper
2 Tbsp. parsley leaves, chopped

Preheat the oven to 425 F. Wash and slice potatoes and onion into ¼ inch slices. In a round pie plate, line the potatoes and onion alternately. Try to match the size of potatoes and onions when arranging them in the pie plate. In a bowl, combine olive oil, melted butter, minced garlic, herbs, Parmesan, salt and pepper. Drizzle the mixture over the potato and onion rounds, brushing the remaining herbs and Parmesan over the top. Bake in the oven for 1 hour or until fork tender with crispy edges. Serve warm, garnished with fresh parsley and Parmesan.

Makes eight servings. Each serving has 160 calories, 7 g fat, 3 g protein, 21 g carbohydrates, 3 g fiber and 120 mg sodium.



Farmers Market Veggie Skillet

3 Tbsp. olive, canola or other oil
1 medium eggplant, or 2-3 smaller variety eggplants, cut into cubes
1 green or red pepper, chopped
1 onion, chopped
1-2 garlic cloves, chopped or minced
1 tsp. salt
¼ tsp. black pepper
4 fresh tomatoes, cubed
Optional fresh herbs if available, such as basil, oregano or parsley, chopped
2 Tbsp. grated Parmesan cheese

Heat the oil in a skillet over medium heat. Add eggplant, green pepper, onion, garlic, salt and pepper and sauté until tender. Add tomatoes and optional fresh herbs just before done and heat through. Top with Parmesan and serve.

Makes six servings. Each serving has 120 calories, 8 g fat, 2 g protein, 13 g carbohydrates, 3 g fiber and 470 mg sodium.



Roasted Vegetables with Garlic

2 c. sweet potato, diced into 1-inch cubes
1 red onion, cut into 1-inch cubes
1 red bell pepper, cut into 1-inch cubes
2 c. broccoli florets
1 yellow squash, sliced and quartered into 1-inch cubes
1 zucchini, sliced and quartered into 1-inch cubes
2 c. white mushrooms, halving larger pieces to match other cuts
2 Tbsp. olive, canola or other oil, divided
2 Tbsp. balsamic vinegar, divided
2 tsp. Italian seasoning, divided
4 cloves garlic, minced, divided
Salt and pepper (to taste)

Preheat oven to 425 F. Line a baking sheet with foil. Place sweet potatoes in bowl and add 1 tablespoon olive oil, 1 tablespoon balsamic vinegar, 1 teaspoon Italian seasoning, salt and pepper. Toss to combine. Transfer sweet potato mixture (reserve bowl) to sheet pan and spread in single layer. Roast for about 30 minutes, then stir. Place remaining vegetables in bowl and add remaining olive oil, balsamic vinegar, Italian seasoning and all of the minced garlic. Season with salt and pepper to taste. Toss to combine. Add to sweet potatoes on sheet pan. Roast 10 to 15 minutes longer or until tender. Roasting time may need to be adjusted depending on size of vegetables. Serve immediately.

Makes 12 servings. Each serving has 80 calories, 1 g fat, 2 g protein, 10 g carbohydrate, 2 g fiber and 30 mg sodium.



Sweet Potato Black Bean Stew

Cooking spray or dash of cooking oil
1 medium onion, finely chopped
1½ tsp. minced garlic
4 medium sweet potatoes, peeled and chopped OR 2 (15-oz.) cans sweet potatoes, drained
1 (15.5-oz.) can black beans, drained and rinsed
6 c. low-sodium vegetable stock
4 bay leaves
½ tsp. cinnamon
1 tsp. cumin
2 tsp. ground coriander
Salt to taste

Lightly spray pot with cooking spray or use a dash of vegetable oil. Cook onion and garlic on low heat until softened. Add chopped sweet potatoes and beans; cook for one minute. Add remaining ingredients. Cover and cook for 15 minutes over medium heat or until sweet potatoes soften. Remove and discard bay leaves. Remove from heat. For a creamy base, blend some of the stew with a hand-held immersion blender, or remove about 2 cups of the stew and blend in a blender, being careful of hot stew.

Makes eight servings. Each serving has 110 calories, 0 g fat, 3 g protein, 25 g carbohydrate, 6 g fiber and 240 mg sodium.

Nutrition: One clove of raw garlic has 4 calories, 0.2 g protein, 0 g fat, 1 g carbohydrate, 0 g fiber and less than 1 mg sodium. Garlic also provides a small amount of potassium, calcium and phosphorus.



White Bean Pasta

8 oz. whole-wheat pasta shells, tubetti, ziti or rigatoni
2 Tbsp. olive, canola or other oil
1 (15-oz.) can cannellini beans, drained and rinsed
1 large clove garlic, minced
2 (14.5-oz.) cans tomatoes, diced
¼ c. black olives, pitted and chopped
1 tsp. dried basil
¼ tsp. salt
⅛ tsp. ground pepper
¼ c. shredded Parmesan cheese

Bring a large pot of water to boil. Add pasta, stirring occasionally. Cook until just tender, 8 to 10 minutes or according to package directions. Drain. Meanwhile, heat oil in a large skillet over medium heat. Add beans and garlic; cook, stirring frequently, until the beans are just heated through and garlic becomes fragrant but not browned, about 2 or 3 minutes. Add remaining ingredients except for cheese. Cook on medium-low heat for a few more minutes until flavors mingle. Remove from heat. To serve, top pasta with bean mixture and Parmesan.

Makes six servings. Each serving has 280 calories, 8 g of fat, 44 g carbohydrate, 7 g fiber, 11 g protein and 500 mg sodium.



Mashed Potatoes with Cauliflower and Roasted Garlic

1 bulb roasted garlic (8 to 10 cloves)
2½ lb. red potatoes, cubed, peeled or unpeeled
1 large head cauliflower, roughly chopped
¼ c. olive, canola or other oil
¼ c. butter
¼ c. half and half, or regular cream
Seasonings to taste (salt, white or black pepper, fresh or dried chives)
Smoked or regular paprika

Roast the garlic using the Basic Roasted Garlic recipe. Place potatoes and cauliflower in a large stockpot and fill with enough water to cover. Cook until potatoes and cauliflower are fork-tender. Drain in colander. Add olive oil, butter, cream and seasonings to emptied stockpot, warm, then add back in potato-cauliflower mixture. Mash. Serve garnished with smoked paprika.

Makes 12 servings. Without added seasonings, each serving has 170 calories, 9 g fat, 3 g protein, 20 g carbohydrate, 3 g fiber and 70 mg sodium.