

A Taste of Culture: Evidence-based Health Benefits of Cooking with Herbs and Spices¹

Isabella Alobele, Lori Johnson, Hillary MacMichael, Amy Mullins, Ava Theng, Madison Gindea, Ryan Perez, Tatiana Tchuisse, Yvette Vork, and Melissa Vilaro²

Health professionals interested in how systematic feedback can be used to refine health promotion materials, with a focus on culture and inclusivity, will find this information beneficial. General audiences interested in the types of community-based health promotion classes offered within UF/IFAS Extension will also benefit from this information.

Introduction

Chronic diseases such as cancer, diabetes, and cardiovascular disease are closely tied to dietary patterns and nutrition (American Cancer Society, 2023). UF/IFAS Extension offers a variety of group-based nutrition education and culinary skills training classes in communities throughout Florida to support health and wellness. Taste of Culture is a culinary-based Extension program that integrates cultural exploration, culinary skills, and evidence-based health benefits of cooking with herbs and spices. The curriculum was created by the county-based Extension faculty and further refined by an Extension state specialist as well as undergraduate and graduate students. The four-lesson curriculum currently covers African, Caribbean, East Asian, and South Asian cuisines.

We provide a brief background on the health benefits of herbs and spices. This publication covers the health benefits of cooking with herbs and spices with a focus on up-to-date scientific evidence on the anti-inflammatory, antioxidant, and metabolic health benefits associated with their culinary use. This is the first publication in a two-part series related to the Taste of Culture curriculum.

What Are Herbs and Spices?

Herbs and spices have been used for centuries across different parts of the world to enhance the flavor, aroma, and color of foods while also contributing to overall health (Isbill et al., 2020; Jiang, 2019).

- **Herbs** are non-tropical plants whose leaves or stems are commonly used for flavoring, medicinal purposes, or fragrance. Unlike spices, which generally come from

the roots, seeds, bark, or fruits of tropical plants, herbs are more leaf- and stem-based, although some also provide harvestable seeds or roots (McLaurin & McLaurin, 2011).

- **Spices** are aromatic plant products that are dried and typically ground and can come from various parts of plants, including buds (e.g., cloves), bark (e.g., cinnamon), roots (e.g., ginger), berries (e.g., peppercorns), aromatic seeds (e.g., cumin), and even the stigma of flowers (e.g., saffron) (Tapsell et al., 2006).

Culinary Use of Herbs and Spices

Emphasizing the use of spices and herbs while cooking and preparing meals is known as culinary use. This differs from herbs and spices that may be used as supplements or extracts. The culinary use of herbs and spices refers to using them in amounts that are typical during regular food preparation. They can be whole, powdered, ground in food or drinks, or “encapsulated and at doses that could reasonably be achieved in the diet without negatively impacting the taste” (p. 3; Mackonochie et al., 2023).

Health Benefits of Cooking with Herbs and Spices

Research studies have shown that herbs and spices offer many health benefits, partially because of their nutrient-dense composition and inclusion of essential nutrients, vitamins, and antioxidants (Yashin et al., 2017). Using herbs and spices to flavor food can also help reduce high blood pressure and other heart problems related to eating too much salt (Grillo et al., 2019). Research continues to explore the possible health benefits of incorporating herbs and spices into meals (Opara, 2019). For example, a research review found that cinnamon might help lower blood pressure, especially when used in small amounts for 12 weeks or more by people under 50 years old (Mousavi et al., 2019).

Reducing Salt Intake

Using herbs and spices can help cut down the need to use salt to flavor dishes while cooking. This can help adults maintain recommended levels of sodium intake (Tapsell et al., 2006). The U.S. Dietary Guidelines for Americans recommend that:

- Adults with high blood pressure, diabetes, heart failure, or chronic kidney disease should aim for no more than 1,500 mg/day of sodium.
- Adults without these conditions should aim for no more than 2,300 mg/day of sodium (Anderson et al., 2015).

Adding herbs and spices to your meals may support improved long-term health outcomes (Mackonochie et al., 2023). While the research about health benefits of herbs and spices is still evolving, we have learned some ways that they may impact health outcomes (Table 1).

Food, Culture, and Health: How Do They All Relate?

The concept of “Food Is Medicine,” also known as “Food as Medicine,” has several definitions and approaches. The Department of Health and Human Services’ (USDHHS) Office of Disease Prevention and Health Promotion defines it as the notion that food and nutrition can help improve health, and access to nutritious food is essential for well-being (USDHHS ODPHP, 2024). UF/IFAS Extension is particularly well-suited to address the five guiding principles for Food Is Medicine as outlined by USDHHS ODPHP: 1) Recognize nourishment is essential for good health, well-being, and resilience; 2) Facilitate easy access to healthy food across the health continuum in the community; 3) Cultivate understanding of the relationship between nutrition and health; 4) Unite partners with diverse assets to build sustained and integrated solutions; and 5) Invest in the capacity of under-resourced communities.

Cultural and traditional cuisines and their ingredients can engage audiences with new flavors and health benefits. For example, food staples in African diets, such as grains, roots, and tubers, are rich in complex carbohydrates, vitamins, minerals, and dietary fiber. Grains provide antioxidants like vitamin E and selenium, which protect cells and may reduce cancer risks (Oniang’o et al., 2003). Learning about these foods creates engaging opportunities to discuss how increased dietary fiber intake is linked to a lower risk of cardiovascular disease and colorectal cancer, and to emphasize the importance of a whole-grain and fiber-rich diet for disease prevention (Soliman, 2019; World Cancer Research Fund, 2018).

Culinary-based Health Promotion Programs

Teaching individuals about the bioactive properties of foods, herbs, and spices in accessible language during interactive culinary lessons can empower learners to adopt healthier dietary practices while simultaneously promoting cultural diversity (D’Adamo et al., 2016). Several examples of culinary-based health education programs are described below.

- “Spice MyPlate” was implemented among urban, predominantly African American high school students in Baltimore, and consisted of weekly one-hour sessions over the course of three weeks. The three-week program improved dietary habits and attitudes toward healthy eating among participants (D’Adamo et al., 2016).
- “Capture the Flavor with Herbs and Spices” program was funded by the McCormick Science Institute and developed by University of Maryland Extension to enhance culinary skills and promote healthier eating habits. The program offers 75-minute interactive workshops that cover the history, use, storage, safety, and health benefits of various herbs and spices while cooking (Wormuth, 2024).
- “Cook Smart, Eat Smart” is a program offered by UF/IFAS Extension, adapted and piloted from North Carolina’s “Cook Smart, Eat Smart” curriculum, which educates participants on healthy meal preparation using simple, cost-effective, and locally sourced ingredients (Zabala, 2020).

Actionable Tips for Eating More Herbs and Spices

- Flavor your meat and vegetables with herbs and spices.
- Grow fresh herbs right by your kitchen window in small pots, or outside in a small garden.
- Try adding herbs and spices to flavor meals instead of adding salt.

Actionable Tips for Teaching about Health Benefits of Herbs and Spices

- Plan lessons that connect meals to health goals, such as reducing sodium and sugar intake.
- Encourage participants to try one new herb or spice each week at home and share their experience in follow-up sessions.
- Make classes interactive by including tasting stations, nutrition facts label reading games, or “guess that herb” activities.

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Tables

Table 1. Evidence linking components in herbs and spices to health outcomes.

Herb or Spice	Description and Health Benefits Based on Research Studies
Sage	<p>How it could benefit: Sage has been studied to understand how it may impact memory, mood, brain health, and inflammation.</p> <p>Amount that may be beneficial: The long-term cognitive benefits of sage consumption require further study (Lopresti, 2017). However, in one study, adults with moderate Alzheimer’s disease who took a sage extract (at a dose of 60 drops per day) for four months had better cognitive function compared to adults without the extract (Akhondzadeh et al., 2003).</p> <p>How to use it/where to find it: Dried sage and fresh sage leaves can be purchased at most grocery stores. You can also grow fresh sage in a home garden.</p>
Turmeric	<p>How it could benefit: Known for its anti-inflammatory and antioxidant properties, turmeric may help with inflammation linked to chronic diseases such as arthritis, metabolic syndrome, cancer, cardiovascular diseases, Crohn’s disease, ulcerative colitis, and peptic ulcers (Gupta et al., 2013; Hewlings et al., 2017; Singletary, 2010). One study* found that taking 1,210 mg/day of a turmeric and black pepper supplement for four months helped improve triglyceride and high-density lipoprotein levels (Preza-Rodríguez et al., 2024).</p> <p>Amount that may be beneficial: Future clinical investigation is required to determine effective amounts of curcumin (the active compound in turmeric). A clinical study with a standardized powder extract found that curcumin is well tolerated at single doses up to 8,000 mg, with only mild side effects observed at doses as high as 12,000 mg (Lao et al., 2006). One study* found that taking 80 mg/day of a lipidated curcumin extract improved heart health markers and boosted antioxidant levels in healthy adults (DiSilvestro et al., 2012).</p> <p>How to use it/where to find it: Curcumin is not easily absorbed by the body so pairing turmeric with black pepper can help improve absorption and boost its health benefits. In a 2024 human study, adding turmeric and black pepper to breakfast reduced blood sugar levels and improved appetite control without causing digestive discomfort (Khan et al., 2024).</p>
Parsley	<p>How it could benefit: Parsley contains flavonoids, antioxidants, and other natural compounds found in many fruits and vegetables. Parsley can help the body absorb and use nutrients better. Antioxidants in general work to eliminate free radicals linked to DNA damage and inflammation (p. 217; Sung, Chung, & Kim, 2016).</p> <p>Amount that may be beneficial: In one study, healthy women with obesity who ate ground parsley seed baked into bread (and a healthy low-calorie diet) for four weeks lost weight, improved lipid profiles, and lowered inflammation (Essa et al., 2024). More research is still needed to know how well parsley works when eaten regularly as part of a normal diet (Alobaidi, 2024).</p> <p>How to use it/where to find it: Parsley is the most widely used culinary herb. It is commonly added fresh and finely chopped to a wide variety of meat, fish, seafood, legume, and vegetable dishes, salads, and soups (Stefanaki & Van Andel, 2021).</p>
Basil	<p>How it could benefit: Basil is rich in antioxidants and anti-inflammatory compounds. Basil is being studied for managing diabetes as well as supporting heart and liver health (Azizah et al., 2023; Balakrishnan et al., 2018; Eid et al., 2023).</p> <p>Amount that may be beneficial: A review of 24 human studies by Jamshidi and Cohen (2017) found that taking Tulsi (holy basil) in doses ranging from 300 mg/day to 3,000 mg/day helped with blood sugar, heart health, immunity, and brain function with no serious side effects reported.</p> <p>How to use it/where to find it: Basil can be used in savory dishes. Basil can also be used in herbal teas. One study shows that boiling basil for five minutes helps keep its health-boosting nutrients (Salamatullah et al., 2021).</p>

Herb or Spice	Description and Health Benefits Based on Research Studies
Cinnamon	<p>How it could benefit: A scoping review by Mackonochie et al. (2023) showed that cinnamon has antioxidant properties and may help improve insulin levels and blood fats in both healthy individuals and those with type 2 diabetes. Zare et al. (2019)* found people with type 2 diabetes who took cinnamon bark powder in 500 mg capsules twice a day for three months showed improved body measurements, blood sugar, and blood fats.</p> <p>Amount that may be beneficial: In one study, eating 6 grams of cinnamon lowered blood glucose levels after a meal and slowed down how quickly food leaves the stomach in healthy people (Hlebowicz et al., 2007).</p> <p>How to use it/where to find it: Cinnamon can be added to beverages, desserts, liqueurs, teas, chicken and lamb dishes, breads and pastries, and fruit preparations (Singletary, 2019).</p>
Garlic	<p>How it could benefit: Although technically a vegetable, garlic is often used with herbs and spices. Garlic has antioxidant properties. It is associated with improved cardiovascular health and cholesterol levels (Mackonochie et al., 2023).</p> <p>A review exploring the health benefits of eating raw garlic found improvements in several health indicators such as cholesterol, blood pressure, and weight loss. Support for eating raw garlic and benefits for other conditions are also explored (e.g., depressive symptoms, cancer risk, hypertension) (Fejes et al., 2024).</p> <p>Amount that may be beneficial: In one study, adults with high blood pressure who took two capsules of aged garlic extract each day (480 mg total) for 12 weeks saw their top blood pressure number (systolic) drop (Ried et al., 2013).</p> <p>How to use it/where to find it: Garlic can be used in many ways. It can be eaten raw, added to cooked meals like soups and sauces, or taken in other forms such as garlic powder, garlic oil macerate, aged garlic extract, or garlic essential oil (Verma et al., 2023).</p>
<p>*Indicates research study or data that include analyses based on extracted components such as essential oils, supplements, or pharmaceutical perspectives versus culinary use of herbs and spices.</p>	

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² Isabella Alobele, graduate research assistant, Department of Family, Youth and Community Sciences, Gainesville, FL; Lori Johnson, Extension agent I, M.S., family & consumer science, UF/IFAS Extension Lake County, Tavares, FL; Hillary MacMichael, Extension agent, family and consumer sciences, UF/IFAS Extension Orange County; Amy Mullins, program Extension agent III, family and consumer sciences, UF/IFAS Extension Leon County, Tallahassee, FL; Ava Theng, undergraduate student, psychology, UF College of Liberal Arts and Sciences, Gainesville, FL; Madison Gindea, undergraduate intern, UF Active Learning Program, Gainesville, FL; Ryan Perez, student, UF College of Nursing, Gainesville, FL; Tatiana Tchuisse, undergraduate intern, UF Active Learning Program, Gainesville, FL; Yvette Vork, undergraduate research assistant, UF College of Public Health and Health Professions, Gainesville, FL; Melissa J. Vilario, assistant professor, health and wellness, Department of Family, Youth and Community Sciences, Gainesville, FL; UF/IFAS Extension, Gainesville, FL 32611.

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