

# The Flavor-Enhancing Properties of Mushrooms

Research from the Culinary Institute of America and University of California-Davis, published in the *Journal of Food Science*, explored the flavor-enhancing properties of mushrooms and found that blending finely chopped mushrooms with ground meat enhances flavor and nutrition.<sup>1</sup>

## Study Overview

The study, *Flavor Enhancing Properties of Mushrooms in Meat Based Dishes in Which Sodium Has Been Reduced and Meat Has Been Partially Substituted with Mushrooms*, conducted by University of California-Davis (UC Davis) and the Culinary Institute of America (CIA) was published in the *Journal of Food Science*. Chef-instructors from the CIA developed eight test recipes, including recipes featuring The Blend™, adding finely chopped mushrooms to beef, and a CIA registered dietitian performed nutrition analyses on the recipes. Six beef taco blend recipes differing in added salt and meat/mushroom blend ratios and two carne asada recipes differing in meat/mushroom blend ratios were developed. The intensity of the sensory attributes of the mushroom preparations, taco blends and carne asada recipes were evaluated by a trained panel of 13 judges using Quantitative Descriptive Analysis to determine the flavor effects of using a blend of chopped crimini and white button mushrooms and ground meat, as well as sensory mitigation of sodium reduction in the taco blends.

## Key Study Findings

This proof-of-concept sensory study provides the basis for how mushrooms and meat can combine for healthier alternatives to iconic American dishes. As the study shows, a traditional ground meat recipe prepared with 50% mushrooms and 50% meat or even 80% mushrooms and 20% meat can:

- **Reduce calorie, fat and sodium intake**, while adding in B vitamins including riboflavin (28% DV), niacin (20% DV) and pantothenic acid (27% DV).<sup>2</sup>
- **Enhance the overall flavor** because of doubling the impact of umami.
- **Maintain flavor** while reducing sodium intake by 25%.

## Tips for Cooking Mushrooms

The study demonstrated that cooking methods have an effect on the flavor profile of white mushrooms.

- **Sear mushrooms** for a more intense roasted, charred and smoky flavor and overall aroma.
- **Roast mushrooms** to get more sweet, salty and umami tastes with caramelized, nutty and buttery flavors.

When cooked properly, mushrooms can take on the texture and consistency of meat. For the best blend results, mushrooms should be chopped to match the consistency of the meat they're pairing with.

- **One-pan cooking** is great for tacos, Sloppy Joes and pasta sauces. Brown meat in a pan until cooked through, remove and set aside. Then, add chopped mushrooms to the same pan, sauté and return meat to the pan to complete the recipe.
- **Create a mushroom base**, ideal for burgers, meatballs and meatloaf. Roast or sauté mushrooms ahead of time to intensify flavor and then finely chop to add to ground meat dishes.

# Make a Blended Burger Like the Pros



Chef Linton Hopkins, local Atlanta restaurateur and “Burger Time” originator, created the irresistible Roasted Mushroom Blend Burgers. The patties get a blast of umami from three different types of mushrooms: crimini, shiitake and oyster. By adding this mushroom blend to ground beef, you can get the most out of your ingredients without sacrificing flavor or nutrition.



## Ingredients

- 8 oz. crimini mushrooms
- 2 oz. shiitake mushrooms
- 2 oz. oyster mushrooms
- 1/4 cup olive oil
- 3 teaspoons kosher salt, divided
- 1/2 pound ground chuck
- 1 tablespoon vegetable oil



## Directions

1. Preheat the oven to 425 F.
2. Thinly slice all of the mushrooms and toss in olive oil and 1 teaspoon salt.
3. Spread the mushrooms in a single layer on a metal sheet pan and roast in the oven for 15 minutes. Remove from oven and cool.
4. In a food processor, pulse the mushrooms into a fine dice.
5. Gently mix the mushrooms with beef and form into four 4 oz. patties.
6. Refrigerate the patties for 15 minutes.
7. Heat a cast iron skillet over high heat and add the vegetable oil.
8. Season the patties evenly with 2 teaspoons of kosher salt.
9. Add the patties to the skillet. Note: The patties are delicate so be careful when laying into pan.
10. Press the patties firmly with a spatula and cook for 3 minutes until crisp on one side.
11. Carefully turn the patties over and press once with a spatula. Cook for 2 minutes.
12. Add a slice of American or sharp cheddar cheese on top. As the cheese begins to melt, place on top of your favorite toasted bun.
13. Serve with whole grain mustard and shaved red onion.

<sup>1</sup> Myrdal M., Mills, K., Wong, T., Drescher, G., Lee, S., Sirimuangmoon, C., Schaefer, S., Langstaff, S., Minor, B. and Guinard, J. 2014. “Flavor-enhancing properties of mushrooms in meat-based dishes in which sodium has been reduced and meat has been partially substituted with mushrooms.” *Journal of Food Science*, 79: S1795-S1804. doi: 10.1111/1750-3841.12549. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=5bc8c7b0a0c1c86d51f86d6e466992c3dcf5364f>

<sup>2</sup> U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. [fdc.nal.usda.gov](http://fdc.nal.usda.gov).