

Adding citrus fiber to meatballs improves nutritional quality, does not affect taste

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Adding a little citrus powder to ground beef can add fiber while retaining the quality and taste of the meat. Credit: Randy Mertens/University of Missouri

Many American diets fall short of meeting nutritional guidelines resulting in burgeoning obesity rates and health problems across the nation. Statistics show that most Americans consume only half of the daily recommended amount of dietary fiber. Now, a research team at the University of Missouri is addressing the fiber deficit by including citrus

fiber in ground beef while retaining the quality and taste of the meat.

Ayca Gedikoglu, a doctoral student studying [food science](#) in the MU College of Agriculture, Food and Natural Resources, and Andrew Clarke, associate professor of food science, recently completed the first test on a citrus meatball recipe. The test consisted of three batches of [meatballs](#), with varying percentages of the meat substituted with citrus powder, to see how much of the sweet and tangy powder could be added without adversely affecting the meatballs' texture and cooking characteristics. The test used 1 percent, 5 percent and 10 percent increments.

Gedikoglu discovered that the citrus fiber increased the cooking yield of the meatball recipe, and that the texture and color of the meatballs remained acceptable when keeping fiber at the 1 or 5 percent levels.

A restaurant-sized serving of Gedikoglu's citrus meatballs, containing 2 percent citrus powder, contains approximately five grams of fiber. Traditionally, meatballs contain no fiber.

The health benefits of [dietary fiber](#), mainly found in fruits, vegetables and whole grains, include helping maintain a healthy weight, preventing or relieving constipation, and reducing the risk of diabetes and heart disease. Soluble fiber, found mainly in whole grains and some fruits, is particularly beneficial for diabetics, because fiber slows sugar absorption and improves blood sugar levels. Fiber tends to make a person feel full faster and stay full longer because it is less "energy dense," which means the product contains fewer calories.

Gedikoglu suggests citrus powder as a replacement for bread crumbs in meatball recipes. Citrus powder, made from citrus peels, can be purchased online at a relatively inexpensive price. Based on her initial test, Gedikoglu also thinks that adding citrus powder to some hamburger

recipes would capitalize on the tangy citrus flavor.

Next, Gedikoglu intends to conduct a series of taste tests. She also will study the potential antioxidant benefits of [citrus](#) powder. Citrus fruits, particularly their peels, are rich with flavonoids, a nutrient in plants that can help prevent diseases in humans such as cancer and cardiovascular diseases.

Provided by University of Missouri-Columbia

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