



## Spices deliver more than pretty a taste

Spice is the variety of life when it comes to food. Think about it. The use of herbs and spices by many cultures likely predates recorded history. Typically, the signature of a culture's cuisine is defined by particular mixtures of herbs, spices and pungently flavored foods.

Although we tend to think of spices and herbs primarily as sources flavor, many cultures understand that these culinary additives offer much more. Some spices actually have antimicrobial effects that can help in the preservation and safety of foods. Recent scientific research has been conducted to evaluate the effectiveness of herbs and spices for use in food safety.

**Question:** Which herbs and spices pack the greatest antimicrobial punch?

**Answer:** It depends on the types of foods and bacteria studied and how the results are measured. Paul W. Sherman, a biologist at Cornell University, ranks garlic, onion, allspice, oregano, thyme, cinnamon, tarragon, cumin, cloves and lemongrass as his Top 10 contenders, in that order.

Somewhat similar results were

reported by Daniel Fung, a microbiologist at Kansas State University. His group has been testing the effects of spices on the increasingly famous E. coli 0157:H7. This is the microbe that keeps finding its way into ground meat and last month caused Con Agra to voluntarily recall 19 million pounds of ground beef.

Fung found that cloves, cinnamon, and garlic worked well to reduce E. coli growth in salami and that cinnamon was effective in apple juice.

**Q:** How much of these herbs and spices is needed to have a significant antimicrobial effect?

**A:** When Fung's group added E. coli to a gallon of apple juice along with four teaspoons of cinnamon, the cinnamon killed 99.5 percent of the bacteria when the juice was left at room temperature for three days.

To kill 99 percent of the E. coli during salami fermentation, garlic had to make up 7.5 percent of the salami mix. You'd really have to be a garlic lover to eat that salami.

**Q:** What countries use the most spices?

**A:** Sherman's research indi-

cates that countries with hotter climates use the most spices. He proposes that this practice evolved to deal with the greater food-safety problems in warm climates.

**Q:** Is it safe to rely on spices for food safety?

**A:** No. By reducing some organisms, spices potentially add a margin of safety. But only cooking or irradiation can be counted on to eliminate pathogenic bacteria in foods.

**Q:** Will the addition of spices always improve food safety?

**A:** Not necessarily. Spices can become contaminated with the spores (dormant stage) of some disease-causing bacteria. If a spice comes into contact with sources of spores, such as soil, during growing, harvesting or processing, it could pick up spores. If that spice is added to a food, such as stew or chili, that is not cooked enough to kill the spores, the spores could grow into live bacteria and cause illness.

The good news is that for decades most packaged herbs and spices have been irradiated to kill bacteria and eliminate this risk and worry.

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