

MOLD IN AND ON FOODS

Fungi, including mold and yeast, range from microscopic mildew to large mushrooms. Molds are capable of growing any where there is moisture, some kind of "food," and air if the temperature is right. Some molds and yeast are integral parts of food products such as cheese, soy sauce, and bread. Molds have been used for the production of beneficial drugs such as penicillin and streptomycin. But some molds produce mycotoxins (fungal toxins) which can be extremely harmful to human health, even in small amounts. Some mycotoxins can survive for a long time in food; most are not destroyed by cooking. Mold growth on crops and in foods causes tremendous economic impact worldwide.

The main body of a mold plant consists of threads or mycelium, also known as "roots" that invade the food. The stalk, the portion above the food, produces spores (seeds), and gives color to the mold. Spores spread the mold from one place to another through the air. Molds which have spread their "root" threads deeply inside a food can be very dangerous because toxin is generally produced around these roots. Molds grow primarily in warmer humid environments but they can tolerate colder temperatures encountered in refrigeration storage. They can withstand much more salt and sugar than bacteria; that is the reason why one can find mold growth in refrigerated jams and jellies (high sugar content), and on cured salted meat such as bacon, ham and salami. Mold growth in foods can consume the acid (change the pH) which in turn may promote bacterial growth. In home canned-foods, a high-acid product can become a low-acid product which is more at risk of pathogenic (illness-causing) bacterial spoilage. Home-canned products which show signs of mold growth should be discarded. Cooking does not destroy

mycotoxins, so it will not make moldy foods safe.

Aflatoxin, produced by the *Aspergillus* group of molds, occurs mostly in peanuts, corn, and their products; it has been called the most potent carcinogen in laboratory animals. Other mycotoxins (such as ochratoxin A and deoxynivalenol) are produced by the *Fusarium* molds and have been found in cereals made from corn and rice. Do not consume moldy or shriveled peanuts. Throw away the entire box of corn meal, cake mix, or other grain flour-based product if any mold has developed.

Home-made jam and jellies covered with paraffin wax are likely to support mold growth. The use of paraffin allows contamination of jelly by mold spores in the air in the moments between pouring the jellies into the jar and covering the jelly with hot paraffin. As paraffin cools, it shrinks and tends to pull away from the side of the jar. This allows spore contamination at the edges of the jelly. Air bubbles in the hot paraffin can also break as the paraffin cools and create tiny holes in the hot wax seal allowing mold growth to begin. Jelly jars should be presterilized by boiling for 10 minutes before jelly is poured into the jars. Presterilization allows the filled jars to be processed submerged in boiling water for only 5 minutes in boiling water bath. If the jars are not presterilized, then the filled jars must be processed for 15 minutes.

There are several ways to minimize the mold growth in the refrigerator and kitchen. Clean the inside of refrigerator every few months with 1 tablespoon of baking soda dissolved in a quart of water. Rinse with clean water and dry. Black mold spots on the rubber gaskets of the refrigerator can be cleaned with 3 tablespoons of bleach in one quart of water. Don't purchase fresh food in large quantities if you cannot consume it quickly. Don't sniff moldy items; the spores can cause respiratory

problems. Moldy food should be put in paper or plastic bags for disposal in a covered trash can so that animals and children cannot get into it.

If the food shows even a tiny mold spot, follow these guide lines:

1. Hard or firm foods with tiny mold spots can be trimmed; cut away the area around the mold (at least an inch) and rewrap in clean wrap. Make sure that knife does not touch the mold.
2. Soft foods such as cheese slices, cream cheese, sour cream and yogurt should be thrown away.

TOSS:

Soft Cheeses, (Mozzarella Brie)
Sour Cream, Yogurt, Cottage
Bacon, Hot dogs, Sliced lunch meats
Meat pies
Opened canned ham
Most left-over food
Bread, Cakes, rolls, flour, pastry
Peanut butter
Juices, berries
Jam, Jellies, Syrups
Cucumbers, Tomatoes
Spinach, Lettuce, other leafy vegetables
Bananas, Peaches, Melons
Corn-on-the-cob
Stored nuts, whole grains, rice

TRIM:

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Hard Cheese (Cheddar, Swiss)
Bell Peppers, Carrots, Cabbage
Broccoli, Cauliflower, Brussels Sprouts
Garlic, Onions
Potatoes, Turnips
Zucchini
Apples, Pears

Federal monitoring of food and forage crops is done continuously by the FDA. Products which are prone to mold growth and toxin production do not reach the grocery store, but once the product reaches home one should be extremely careful to keep the product safe so that molds do not grow.

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