College of Applied Medical Sciences

Department of Environmental Health

Introduction to Food Safety and Microbiology

Lecture 6

Mold and Yeast

In many molds, the body consists of:

• root threads that invade the food it lives on,

• a stalk rising above the food, and

• spores that form at the ends of the stalks

The spores give mold the color you see. When airborne, the spores spread the mold from place to place

Molds have branches and roots that are like very thin threads. The roots may be difficult to see when the mold is growing on food and may be very deep in the food. Foods that are moldy may also have invisible bacteria growing along with the mold.

Are Some Molds Dangerous?

Yes, some molds cause allergic reactions and respiratory problems. And a few molds, in the right conditions, produce "mycotoxins," poisonous substances that can make you sick.

Where Are Molds Found?

Molds are found in virtually every environment and can be detected, both indoors and outdoors, year round. Mold growth is encouraged by warm and humid conditions. Outdoors, they can be found in shady, damp areas or places where leaves or other vegetation are decomposing. Indoors, they can be found where humidity levels are high.

Molds form spores which, when dry, float through the air and find suitable conditions where they can start the growth cycle again.

What Are Some Common Foodborne Molds?

Molds most often found on meat and poultry are *Alternaria, Aspergillus, Botrytis, Cladosporium, Fusarium, Geotrichum, Monilia, Manoscus, Mortierella, Mucor, Neurospora, Oidium, Oosproa, Penicillium, Rhizopus* and *Thamnidium*. These molds can also be found on many other foods

What Are Mycotoxins?

Mycotoxins are poisonous substances produced by certain molds found primarily in grain and nut crops, but are also known to be on celery, grape juice, apples, and other produce. There are many of them and scientists are continually discovering new ones. The Food and Agriculture Organization (FAO) of the United Nations estimates that 25% of the world's food crops are affected by mycotoxins, of which the most notorious are aflatoxins

What is Aflatoxin?

Aflatoxins is a cancer-causing poison produced by certain fungi in or on foods and feeds, especially in field corn and peanuts. They are probably the best known and most intensively researched mycotoxins in the world. Aflatoxins have been associated with various diseases, such as aflatoxicosis in livestock, domestic animals, and humans throughout the world. Many countries try to limit exposure to aflatoxin by regulating and monitoring its presence on commodities intended for use as food and feed. The prevention of aflatoxin is one of the most challenging toxicology issues of present time.

How Can You Protect Food from Mold?

• When serving food, keep it covered to prevent exposure to mold spores in the air. Use plastic wrap to cover foods you want to stay moist — fresh or cut fruits and vegetables, and green and mixed salads.

• Empty opened cans of perishable foods into clean storage containers and refrigerate them promptly.

• Don't leave any perishables out of the refrigerator more than 2 hours.

• Use leftovers within 3 to 4 days so mold doesn’t have a chance to grow.

How Should You Handle Food with Mold on It?

Buying small amounts and using food quickly can help prevent mold growth. But when you see moldy food:

• Don’t sniff the moldy item. This can cause respiratory trouble.

• If food is covered with mold, discard it. Put it into a small paper bag or wrap it in plastic and dispose in a covered trash can that children and animals can’t get into.

• Clean the refrigerator or pantry at the spot where the food was stored.

• Check nearby items the moldy food might have touched. Mold spreads quickly in fruits and vegetables

Hydrogen ion concentration (PH)

-yeasts and molds and some bacteria grow within a wide pH range, e.g. molds grow between 1.5 to 11.0, while yeasts grow between 1.5 and 8.5.

-Yeasts and molds grow under acid conditions.

-Microorganisms that are able to grow in acid environment are called acidophilic microorganisms

what are yeasts ?

Yeast is a microscopic fungus consisting of single oval cells that reproduce by budding. Some yeasts may form filaments (pseudohyphae, or false hyphae) similar to those formed by molds. There about 1,500 species of yeast currently described, estimated to be only 1% of all fungal species.Yeast is capable of converting sugar into alcohol and carbon dioxide. Yeast is very common in environments with sugar-rich material such as the skins of fruits and berries (for example grapes, apples or peaches),