



# IMAGE AWARENESS

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# WELLNESS INSTITUTE

## MOLD

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## INTRODUCTION

Molds are a large group of fungal species which take on a fuzzy appearance as they grow. Under a microscope molds look like skinny mushrooms. The body consists of root threads that often invade deeply into the food it lives on, a stalk rising above the food, and spores that form at the end of the stalks.

Molds are responsible for the biodegradation of natural materials including foods and building materials. Mold can cause significant crop losses in agriculture and expensive damage to buildings.

Molds reproduce by spores which can saturate the environment in proximity to any major fungal colony.

Molds can cause health problems for people. Individuals can be allergic or sensitive to mold spores or they can be seriously damaged by toxins produced by molds (called mycotoxins). Some molds can also take up residence in the human body causing significant health problems. Some molds can cause serious respiratory illness.

All molds require moisture to grow. Water leaks in buildings can trigger mold growth with serious health consequences.

Mold growth in foods makes it unpalatable and often toxic. The major strategies for food preservation such as dehydration, freezing, salting, pickling, and bottling are designed to

prevent or slow bacterial and fungal growth.

## BENEFICIAL MOLDS

### Antibiotics

Molds and bacteria often compete with one another for growing space. Many antibiotics in widespread use today are derived from mold.

One does not need to be a genius to make a great discovery. Alexander Fleming accidentally stumbled upon a powerful antibiotic he called penicillin in 1928. Penicillin is an antibacterial substance produced by mold.

Producing penicillin in quantity proved a daunting task. In March of

1942 half of the total supply produced in the United States was used to treat *one* patient.

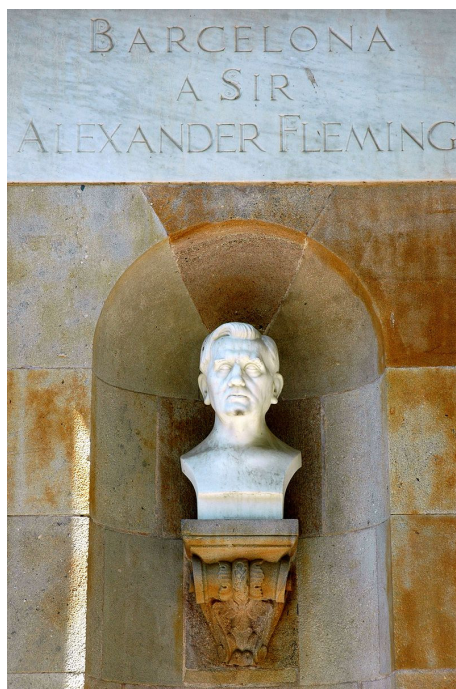
A pharmaceutical firm hired a woman called Moldy Mary to scour markets and restaurants for blue-green mold that would produce greater quantities of penicillin. In the end a housewife brought in a moldy cantalope. The mold produced huge quantities of penicillin and became the source of all modern molds which supply penicillin.

### Fermentation and Curing

Molds have been used in Asia to ferment soybeans and other foods to make soy sauce, tempeh, soybean paste, distilled spirits, and many other food products. The *Aspergillus* species of mold are used for these purposes.

Dry-cured sausages and salami often use starter cultures of molds. The powdery white coating on some of these products is mold. Mold is also used in the preparation of a number of cheeses including Brie and Blue cheese, both of which contain *Penicillium* species.

Red rice yeast is a popular supplement used to reduce cholesterol levels. The supplement is a product of the mold *Monascus purpureus* grown on the rice. The product works like statin drugs.





## TOXIC MOLDS

The term “toxic mold” refers to molds that produce toxic substances called mycotoxins. Mold toxins are most commonly found in grain and nut crops although they have been found on other produce including celery, grape juice, and apples. There are many types of fungal toxins and new ones are being discovered all the time.

Exposure to these toxins can result in a variety of health problems including fatigue, aching or cramping muscles, watery, itchy eyes or blurred vision, respiratory difficulty or chronic cough, cognitive impairment, headaches or migraines, rashes, nasal or sinus blockage or congestion, mood swings, night sweats, metallic taste in the mouth, muscle or digestive pain, and frequent sneezing.

### Ergot

Ergot is a toxic mold commonly found in grains (pictured above left). Ergot-contaminated grains cause a disorder called ergotism or St. Anthony’s Fire, named after an order of monks established in 1095 A.D. to treat the disorder. Ergot toxins cause constriction of the blood vessels which can lead to severe burning sensations in the limbs, gangrene, and loss of limbs.

Ergot toxins can also cause hallucinations and irrational behavior.

### Zearalenone

This mycotoxin is found in a variety of grains. This heat-stable mycotoxin is found in maize, barley, oats, rice, and sorghum. It has estrogenic properties and can cause infertility, abortion, and bleeding problems in farm animals like swine.

### Vomitoxin

Vomitoxin or deoxynivalenol (DON) is another mycotoxin commonly found in grains. This mycotoxin decreases food consumption and causes weight loss in animals which is responsible for the name which references vomiting.

### Aflatoxin

Aflatoxin is the most notorious of all mold toxins. It is poisonous and cancer causing and is commonly found in cassava, chili peppers, corn, cotton seed, millet, peanuts, rice, sorghum, sunflower seeds, cannabis, tree nuts, wheat, and spices. These toxins are commonly found in pet and human foods. Animals fed contaminated food can pass these toxins into eggs and meat. No animal species is immune to this toxin. Aflatoxin is one of the most carcinogenic substances known to exist. Prevention of aflatoxin exposure is one of the most challenging issues in the field of toxicology.

The federal government monitors aflatoxin in corn and peanuts, but presence of the toxin is considered unavoidable even with good manufacturing practices.

## MOLD IN FOOD

There is a great deal of debate how harmful mold is in homes and in the air, but there is no debate on the toxicity of mold in foods. Always examine foods carefully for mold. One way to reduce mold exposure is to purchase the freshest foods possible. This may mean shopping at a farmer’s market.

One of the greatest improvements

in my own personal health resulted from making an attempt to consume only the freshest foods possible. In my case this has involved growing a garden and bringing foods directly from the soil to the table.

Foods frequently contaminated with molds include improperly dried teas, stale nuts, old grain products, and fruit juices. Many juice producers use overripe fruits contaminated with mold. Foods like catsup and grape juice can be contaminated.

Here are some general rules:

Inspect all food for mold prior to eating it.

Do not cross-contaminate foods. Wash hands thoroughly before handling food.

Keep the refrigerator clean and discard food which shows any signs of mold.

Store produce in clean containers. Never store grain or other dry products in moist containers.

Be cautious of nuts. You want only this year’s crop. Major chains often sell nuts that are from the previous crop.

### REFERENCES:

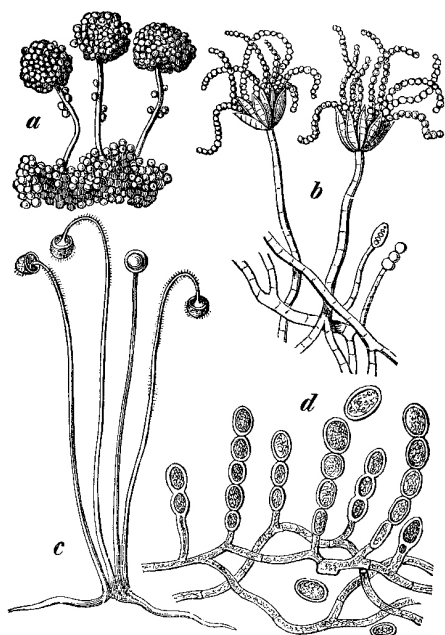
<http://www.floridamoldtesting.net/toxic-mold-growth-in-food.htm>

[http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/molds-on-food-are-they-dangerous/\\_ct\\_index](http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/molds-on-food-are-they-dangerous/_ct_index)

Blasser, Martin J., *Missing Microbes*, New York: Henry Holt and Company, 2014, 55, 60.

<https://en.wikipedia.org/wiki/Penicillin>





## AVOIDING MOLD

Molds are extremely hardy and can survive and grow in what would be excessively harsh environments for many other organisms. They can grow in the refrigerator and can tolerate salt and sugar better than most microbial invaders. Thus one can find them growing in refrigerated jams and jelly and on cured, salty meats like ham, salami, and bologna.

Cleanliness is vital in avoiding mold. Spores can accumulate in the refrigerator and on unwashed dishcloths and other cleaning utensils. It is a good idea to clean the inside of the refrigerator with a tablespoon of baking soda dissolved in a quart of water every few months. Visible mold should be scrubbed off. Visible mold spots can be treated with 3 teaspoons of bleach in a quart of water.

It is particularly important to keep towels, dishcloths, mops, and sponges clean. Discard them if they cannot be cleaned.

Keeping the humidity of a home below 40% will discourage the growth of mold spores.

Leftovers should be consumed within 3 or 4 days to reduce risk of mold exposure. Never smell a food

with visible mold growth. You could be exposing yourself to toxic mold spores.

Moldy foods should be removed from the living environment as rapidly as possible. Take measures to make sure that children and pets are not exposed to them.

Mold spreads rapidly between fruits and vegetables. If one of these items is stored with others, check carefully to make sure the mold has not spread.

Molds spread rapidly through soft foods like bread, peaches and tomatoes. If they are contaminated the entire food should be discarded. Molds on hard foods like a hard cheese and carrots can sometimes be eaten if one cuts one inch below the molded spot.

### REFERENCES:

<http://www.cdc.gov/mold/default.htm>  
<http://www.cdc.gov/mold/faqs.htm>

## TREATING MYCOTOXIN EXPOSURE

Mold toxins have an affinity for cholesterol and bile acids. They have been shown to insert themselves between cholesterol molecules. Absorption may be increased if moldy foods are consumed with fatty foods. Mycotoxins may be released into the body during fasting or illness when saturated fats stored in the body are accessed. Mycotoxins can be excreted in the bile, assuming that the bile is not reabsorbed.

The affinity of mycotoxins for cholesterol and bile forms the basis for a detoxification protocol developed by Dr. Ritchie Shoemaker. Shoemaker utilized cholestyramine, a prescription medication that prevents reabsorption of bile and lowers cholesterol, to treat accumulation of mycotoxins and other fat soluble toxins. Cholestyramine is not absorbed. It combines with toxin laden bile and carries it out of the body.

Mold remediators usually use

cholestyramine or similar compounds after exposure to mycotoxins. Heavy exposure to mycotoxins from foods or buildings can be very difficult to treat if individuals have a high susceptibility to mold toxins.

Schaller and Rosen suggest that Chitosan has potential as a mold binder. Studies show that some mold toxins also bind to activated pharmaceutical-grade charcoal. They also discuss the benefits of omega-3 fatty acids and magnesium administered directly into the blood stream (I.V.).

Bile excretion can also be increased with high intake of fiber and with high intakes of a buffered vitamin C which can loosen the stool or cause the notorious "ascorbate flush" emptying the colon with a watery diarrhea. (Don't try that while out shopping!)

A number of antioxidants have been used to reduce the toxic effects of mold and to prevent the development of cancer while exposed to mold toxins. Nutrients utilized, especially in livestock production, include vitamins A, C, E, carotenoids, polyphenols, curcumin, and sulfur containing compounds.

### REFERENCES:

Mahfoud, Radhia, et al., pH-Dependent interaction of fumonisin B<sub>1</sub> with cholesterol: Physicochemical and molecular modeling studies at the air-water interface, *Journal of Agricultural and Food Chemistry*, 2002;50:327-331.

Gowda, N.K.S. and Ledoux, D.R., Use of antioxidants in amelioration of mycotoxin toxicity: A review, *Animal Nutrition and Feed Technology*, 2008;8(1):1-11.

Rosen, Gary, and Schaller, James, *Your Guide to Mold Toxins*, Tampa, FL: Hope Academic Press, 2006, 20-21.





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### BUILDINGS

Millions of homes and schools are contaminated with mold. Moisture in excess of 65% in a building fosters mold growth. Water damage to a building can cause mold growth.

Exposure to a mold contaminated building can cause a wide variety of symptoms including fatigue, headaches, sinus congestion, asthma, muscle aches, deterioration of mental functioning, metallic taste, sensitivity to bright light and vision abnormalities.

Vision abnormalities are often used for the diagnosis of mycotoxin exposure. This can be done with the Visual Contrast Sensitivity Test ([www.vctest.com](http://www.vctest.com)) or with the Functional Acuity Contrast Test (FACT®). Testing is available for free or a small donation.

Mold toxins can also create a wide variety of psychiatric symptoms including anxiety, irritability, depression, panic attacks, and about any other type of psychological manifestation one can think of.

The U.S. Environmental Protection Agency reports that 30% of all U.S. structures have indoor mold.

Every year one in ten homes has an indoor water leak which can lead to mold growth.

REFERENCE:

[www.vctest.com](http://www.vctest.com)

### KEY ISSUES

**Diagnosis:** Mold toxicity can be difficult to diagnose. Mold growth is often out of sight. Look for water damage, test for mold spores, evaluate physical and emotional changes upon exposure, and do a visual sensitivity test to assess mold toxicity.

Not everyone is equally susceptible to mold toxins. About one out of four people are highly susceptible to mold toxicity.

**Mold Clean-Up:** Be cautious with mold clean up. There are dual risks of increasing exposure and spreading contamination to other parts of a building.

**Ongoing Healthy Building:** Control humidity and purify the air with a quality device. Dr. Doris Rapp, a board certified environmental medical specialist, recommends the Healthmate Austin Air Purifiers. Mold growth is encouraged when the humidity in a building is greater than 65%.

**Treatment:** Consider the use of mold toxin binders and supplements which boost immune capacity.

REFERENCES:

<http://www.drrapp.com/books-dvds-air-purifiers/healthmate-air-purifiers/>

### WEB RESOURCES

[www.imageawareness.com](http://www.imageawareness.com)

[www.yourbodyssignlanguage.com](http://www.yourbodyssignlanguage.com)

[www.jimmcafee.com](http://www.jimmcafee.com)

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