Molds

Molds exhibit some of the characteristics of the higher plants. They are multiple cell organisms forming tubular filaments. Molds demonstrate branching and reproduce by means of fruiting bodies, called spores, which are borne in or on aerial structures. Their mycelia, or intertwined filaments, may resemble roots. They are many times larger than bacteria and somewhat longer than yeasts.

Molds are widely distributed in nature, both in the soil and in the dust carried by air. Under suitable conditions of moisture, air and temperature, molds will grow on almost any food. The black or green discoloration that appears on moldy bread is familiar evidence of such growth. Molds are also able to survive on a wide variety of substances not normally thought suitable for the support of life. These include concentrated solutions of some acids and water containing minute quantities of certain salts, as well as on building structures. Molds grow readily on the walls and ceilings of buildings where there is high humidity and considerable moisture condensation. Mold growth can even occur in refrigerators, because molds are much more tolerant to cold than to heat. Molds can grow at reduced water activities (a_w) and can be a problem in improperly processed dry and semi-dry fermented products, as discussed later.

Molds are capable of consuming acids, thereby raising the pH of products. Their growth in foods has, on very rare occasions (and never in meat or poultry products), removed the acid conditions that inhibit growth of *Clostridium botulinum,* a food borne pathogen discussed later in this section.

Most molds have little heat resistance and cannot survive the thermal processes for low-acid canned foods. Some molds produce a type of spore (ascospore) that is more resistant to heat, but these spores are much less resistant than the spores that are the target of processes for low-acid and acidified canned foods; these heat-resistant molds have not caused problems in meat and poultry products. Therefore, molds are present in canned meat and poultry products only as a result of gross under-processing or as a post-processing contaminant. Since molds must have oxygen to grow, only slight growth can occur unless the food container has an opening to the outside environment.

Mold growth in thermally processed commercially sterile and shelf-stable foods has to date not been shown to present a public health problem. In fact, mold is used in the ripening process of some sausages.