

## Staphylococcus aureus

*Staphylococcus aureus* is associated with mucous membranes (nose and throat) and is commonly found on the skin and hair of healthy humans and animals. It is also present in infected wounds, lesions and boils from both humans and animals. It is easily spread through the air via coughing and sneezing, and can contaminate meat from the animal skin or tissue during slaughter. After slaughter and after cooking, the meat can be contaminated from handling by individuals carrying the organism.

*Staphylococcus aureus* is not a good competitor with other microorganisms and, thus, usually is not a problem in raw foods. This organism becomes a problem when competitive microbes are removed by cooking or inhibited by high salt levels. In salted meats, where many microorganisms are inhibited, *S. aureus* can flourish without the proper controls. Even though *S. aureus* can grow with or without the presence of air, it prefers to grow aerobically; thus its presence in sausage usually occurs at the product surface and outer 1/8”.

Staphylococcal food poisoning is caused by the consumption of a heat stable enterotoxin produced as a byproduct during the growth of certain strains of *S. aureus*. Toxin production requires considerable growth by the microbe and is normally not present until the total cell numbers reach 1 million per gram of meat. Since the microorganism is readily destroyed by heat but the toxin is heat stable, total counts of *S. aureus* may not indicate if the toxin is present. Proper control is required in the early stages of the sausage production when the pH is high. Proper sanitation and personnel practices reduce product contamination, while temperature control reduces potential growth prior to fermentation. Using a commercial starter culture assures microbial dominance of fermentation strains over any potential pathogens and a controlled reduction of pH to 5.3 to inhibit potential *S. aureus* growth during fermentation. Most companies monitor the rate of pH drop to determine that fermentation is proceeding as expected.

Some companies may test batches for *S. aureus*. This may be done routinely for all products, for certain products known to be more prone to contamination with *S. aureus*, or when a batch does not ferment properly. Monitoring any *S. aureus* numbers should be done immediately after fermentation and before any cooking. If a product has received a heat treatment that could have reduced the number of *S. aureus*, then the lot should be tested for enterotoxin. Thus analyses of final product should be for enterotoxin and not *S. aureus*. All analyzes should be done on the outer 1/8” of the product.

There have been no reported cases of staphylococcal foodborne illness from fermented meats produced in the U.S. for over 20 years. This is due in large part to the widespread use of commercial starter cultures and education of producers by starter culture suppliers and trade associations in best practices for production of fermented meats.