

## ***PROCESSING TIP . . .***

### **WHAT ARE THESE WHITE SPOTS ON MY BONELESS, SKINLESS BREAST FILLETS AND THIGHS?**

Recently, a number of poultry processors have experienced product recalls due to the presence of white spots that appear on boneless, skinless breast fillets or thighs. Often, these spots appear long before the product has reached its expected shelf-life and can be accompanied by a variety of foul odors described as sulfur-like, sour, or putrid. This problem is causing a great deal of consternation because the companies are having difficulty understanding why it suddenly appears, how it differs from common product spoilage, factors within the plant that might contribute to the problem, and how to correct the problem.

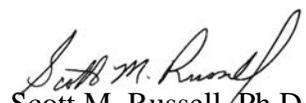
The first and most important concern is to identify the organism causing the problem. The most effective way to do this is to pick the white spot off the spoiled meat, spread it onto a microscope slide and examine the appearance of the organisms that predominate on the slide. If the organisms are rod-shaped and do not have any small protuberances on them, they are likely *Lactobacilli*. This can be double checked by conducting a Gram stain since these bacteria are Gram-positive. Additionally, *Lactobacilli* produce acids, which give off a “sour” spoilage odor. If the organisms appear to be large, and budding (have small protuberances on the surface of the cells), they are likely yeast cells. It is important to determine whether the problem is being caused by a bacterium or yeast because their origin and the solution to the problem will vary greatly depending on which one is responsible.

If microscopic examination reveals that the organism is a Gram-positive rod, then it should be confirmed as *Lactobacillus* by plating the white spots onto MRS Agar. If the bacteria grow on MRS agar, they are likely *Lactobacilli*. If the organism shows clear evidence of budding, then the white spots should be plated onto yeast and mold agar.

#### **PUTTING KNOWLEDGE TO WORK**

Research has demonstrated that the use of acidifiers on litter may reduce populations of “normally” encountered microbial species and enhance populations of acid tolerant bacteria (*Lactobacilli*) and yeast. Very high levels of *Lactobacilli* may be found in the litter and fecal material when acidifiers are used. This has a beneficial effect in terms of reducing colonization in the gut and contamination of the litter with *Salmonella*, but may result in premature spoilage. *Lactobacilli* may also build-up in the plant and form biofilms. This occurs in areas where CO<sub>2</sub> snow is used and a source of chicken juice or blood is present. Sometimes, CO<sub>2</sub> snow is used to chill poultry parts during marination. An anaerobic environment prevents the growth of normal spoilage bacteria but allows for the growth of *Lactobacilli*. This is especially important if CO<sub>2</sub> flushing or vacuum packaging is used during tray packing of poultry parts. Thus, high *Lactobacilli* levels in feces due to acidic litter in the house, use of an anaerobic environment during packaging, and build-up of biofilms of *Lactobacilli* within the plant can all lead to the premature spoilage of poultry products.

Yeasts are commonly found in poultry feed. It is a normal inhabitant of corn and is normally killed during pelleting. Use of antibiotics in poultry feed allows the yeast to become predominant within the chicken’s intestine. This is similar to the effect observed in women. Many women that take antibiotics soon have problems with a yeast infection. Also, acidification of litter inhibits bacteria and allows acid-tolerant yeast to grow. Yeast may also come into the plant via the ventilation system. Processing plants surrounded by row crops of corn are especially vulnerable to infestation. Some processors airflow comes through trash compactors. If the compactors are ever used to transport fruits, they will contain an enormous number of yeast which may be transported to the product via the air. Likewise, raw chicken should never be stored in the same cooler with fruit as yeast cells may be blown from the fruit to the meat, resulting in premature spoilage. As with *Lactobacillus*, altering the environment of the meat using CO<sub>2</sub> or vacuum packaging will select for yeast to be the organism responsible for spoilage instead of the normal spoilage flora (*Pseudomonas*). What makes these white spots especially problematic is that people expect spoilage odors to occur; however, consumers do not expect the appearance of white spots and find them objectionable. They often report that the chicken is “moldy”. This results in a very bad reputation for the poultry processor and must be addressed immediately. Stay tuned for suggestions as to how to eliminate these problems.

  
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“Your local County Extension Agent is a source of more information on this subject.”