

Melanosis (Blackspot) and Control in Shrimp in Louisiana

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Blackspot, or melanosis, in shrimp is a harmless but objectionable discoloration or darkening, occurring primarily along the swimmerets, head, tail and nearby shell areas, before spreading further along shell edges and through the body.

Blackspot is caused by a system of enzymes that are naturally present in the shrimp. These enzymes, in the presence of air, can chemically transform colorless compounds in the shrimp into complex brown pigments near the shrimp surfaces and shell.

These initial color changes are NOT an indication of bacteria spoilage. Since blackspot is caused by enzymes naturally present in the shrimp, the darkening occurs before bacteria grow and cause deterioration and spoilage. However, even though we eat with our mouth, we buy with our eyes. Blackspot is a color defect, and negatively affects quality perception and purchase by the customer.

Blackspot in shrimp has traditionally been prevented and controlled by the use of sodium sulfites, known as dip or powder. When used correctly at the proper dip solution and soak time and on the vessel soon after harvest and rinsing, sulfites are very effective in preventing blackspot from forming during storage.

An issue of concern with using sulfite dip is that a small percentage of consumers are allergic to sulfites. To control this potential food safety hazard, the FDA requires that labels on sulfited and packaged shrimp products include a statement that the product contains sulfites. This statement will alert the sensitive consumer of the health risk of eating the shrimp that contains sulfites. This same statement to the direct sales customer will provide similar protection for sulfite-sensitive people.

Another risk to the fisherman is the abuse, or overuse, of sulfites on shrimp that then are improperly chilled and stored or frozen, and spoil in the hold. This situation can then produce hydrogen sulfide gas, which is very poisonous, and presents a serious health risk for people entering the hold for unloading.

Alternative enzyme-based products, with trade names such as Everfresh or Prawn Fresh, have been developed in recent years that do not contain sulfites to control blackspot on shrimp. This allows for producing “sulfite free” shrimp without blackspot, which do not then require a sulfite statement on the package label. These and potentially other alternative products allow marketing shrimp to customers who want shrimp that do not contain sulfites.

These alternative products have been developed in shrimp fisheries other than in southern Louisiana and the Gulf of Mexico. Their label use directions (solution concentration and soak time) may need to be adjusted or increased to effectively control blackspot during storage and distribution.