

Use of Nitrite to Cure Meat

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Historically, meat was preserved using salt. Early sausage makers recognized that using certain salts produced a distinct color and flavor in meat products. It is believed that these salts contained an impurity called potassium nitrate, better known as saltpeter. It wasn't until the late 1800's that scientists began to understand the role that saltpeter played in meat curing. In 1891, it was identified that the nitrate in saltpeter was chemically changed to nitrite by the action of bacteria found normally on meat. At the turn of the century, it was established that the reddish-pink color of cured meat was due to nitrite and not nitrate. These and other discoveries led to the use of nitrite as a meat curing ingredient. If you look at the ingredient statement of cured meat products, it is listed on the label as sodium nitrite.

Nitrite imparts several important qualities to cured meat. The most visible characteristic is the color of cured meat. For example, compare the color of a cooked, fresh pork chop to a cooked, cured ham slice. The pork chop will have a brownish color while the ham slice will be reddish-pink. Next, taste the pork chop and the ham slice. The ham slice carries the characteristic flavor of cured meat. Nitrite also helps to prevent the development of off-flavors in cured meat during storage.

One of the most important reasons nitrite is used to cure meat is to inhibit the growth of food poisoning and spoilage microorganisms, especially the bacteria that causes botulism, in case cured meat is mishandled and stored at temperatures above 40F. One common misconception held by many consumers is that it is safe to store cured meat products at room temperature. It is recommended that ham, bacon, bologna and other heat-processed cured meats be stored refrigerated or frozen.

There has been concern over potential health risks from nitrosamines in cured meat products. Nitrosamines are compounds which can form when nitrites combine with amines, a natural component resulting from the breakdown of proteins. Most cured meat products do not contain nitrosamines. Previously, traces of nitrosamines had been detected in bacon fried at high temperatures until it was crisp and very well done. To minimize the risk of nitrosamine formation in fried bacon, the amount of nitrite that may be used to initially cure bacon has since been reduced. Research has shown that health risks from nitrosamine formation in cured meat are negligible. In fact, people are routinely exposed to nitrates, which can be converted in the body to nitrite, through drinking water, vegetables and other sources. The use of nitrite in meat allows for the selection of a wide variety of safe, flavorful meat products.