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## MEDIA MYTHCRUSHER

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# Meat Curing and Sodium Nitrite

*The use of nitrite to produce cured meats like salami, ham, bacon and hot dogs, is a safe, regulated practice that has distinct public health benefits. However, much confusion and even mythology surrounds nitrite. Being mindful of key words and statistics and providing appropriate context can help reporters improve the accuracy of their coverage and the information that is passed on to readers and viewers. We've compiled ten tips to improve accuracy when writing about the use of sodium nitrite in cured meats.*

**#1: Nitrite is not 'unnatural'.** Before refrigeration was available, humans salted and dried meat to preserve it. It was discovered that the nitrate in saltpeter was extremely effective in causing a chemical reaction known as "curing." Not only did this give meat a distinct taste and flavor, it also preserved it and prevented the growth of *Clostridium botulinum*, which causes botulism.

Later on, scientists came to understand that nitrate naturally found in the environment converts to nitrite when in the presence of certain bacteria. In fact, when nitrate comes in contact with the bacteria present in human saliva, some of it converts to nitrite and a portion of nitrite is further converted into nitric oxide, which was deemed the Molecule of the Year by *Science Magazine* in 1992 because its role in ensuring health was finally understood. The body actually operates its own nitrogen cycle and produces, or synthesizes, nitrate, nitrite and nitric oxide independent of any foods that are consumed.

**#2: Meat companies don't commonly use nitrate in cured meat (they use nitrite).** While

the terms nitrate and nitrite are often used interchangeably, meat companies mainly use sodium nitrite to cure meat, not sodium nitrate. At the turn of the 20<sup>th</sup> century, German scientists discovered nitrite (and not nitrate) was the active form of these curing salts. When added directly, rather than as nitrate, meat processors can have better control of this important curing ingredient and more closely manage how much they are adding.

**#3: Cured meats are a miniscule source of total human nitrite intake.** Scientists say that 93 percent of human nitrite intake comes from vegetables, particularly root vegetables like celery, beets, carrots, spinach and lettuce, and from the body's own processes. Less than five percent of human nitrite intake is sourced to cured meats.

**#4: Sodium nitrite is NOT a 'known carcinogen.'** While media often parenthetically refer to sodium nitrite as "a known carcinogen," or "known to cause cancer," the U.S. National Toxicology Program in 2000 completed a multi-year rat and mouse feeding study to test nitrite's safety. A panel of scientists reviewed

the results and concluded that nitrite does not cause cancer at the levels used in the meat industry. Further, the USDA closely monitors nitrite usage for an additional control.

Some epidemiological studies – the type of studies that analyze what people eat and their health outcomes -- have suggested an association between consumption of nitrite-cured meats and some forms of cancer, just as they have suggested associations between cell phones, bras, mouthwash, deodorants and many other common products with various cancers at various points in time. But a true causal relationship has never been proven for any of these consumer products, including cured meats.

The U.S. maintains a master list of known and suspected carcinogens and sodium nitrite is not on that list.

**#5: Cured meats labeled ‘no nitrates or nitrites added’ are not necessarily ‘nitrite free.’** Some meat companies choose to add sea salt or celery powder to cured meats instead of the purified versions (a.k.a. sodium nitrate or sodium nitrite) because of their high availability and high naturally occurring nitrate content. This is an alternative curing approach. USDA requires that meat products that do not have nitrate or nitrite added directly be labeled “uncured,” something the meat industry believes is somewhat misleading. Because USDA regulates not just product safety, but how products are labelled, meat companies have no choice but to follow the rules. Labels might read, “Uncured pastrami. No nitrates or nitrites added other than that which occurs naturally in celery powder.”

A chemical analysis of pastrami cured by adding nitrite directly or by using nitrate/nitrite-containing celery powder would probably show similar amounts of remaining nitrite in the two products.

**#6: The nitrate and nitrite in celery, beets and other root vegetables is no different than the nitrate or nitrite that is added to cured meats.**

While some people prefer the *idea* of nitrate that is added via celery powder (and which then converts to nitrite) versus direct addition of nitrite, the chemical and biology of the curing ingredients, regardless of source, is identical and results in equal safety.

**#7: Nitrite use is NOT simply at the discretion of the meat processor.**

By contrast, the U.S. Department of Agriculture Food Safety and Inspection Service sets specific nitrite levels that are permitted during meat curing in plants and inspects those products to ensure that nitrite is used within regulatory limits and properly labelled.

**#8: Nitrite does not equal ‘nitrosamine’.**

Nitrosamines are known carcinogens. It is true that in a laboratory setting, if nitrite and nitrosatable amines were heated to extremely high temperatures over a sustained period of time, nitrosamines could be formed. High temperature cooking is usually at temperatures greater than 300°F. Cured meats can be exposed to these extremely high temperatures, but processors have added ingredients like sodium ascorbate (form of vitamin C) and sodium erythorbate, (a “mirror image twin” of vitamin C), prevent nitrosamine formation. Meat processors routinely add these ingredients to cured products as an added safety measure, in addition to the strictly enforced regulated levels of nitrite that is permitted in cured meats.

**#9: Nitrate and nitrite in foods is NOT ‘unhealthy.’**

Consider that to reduce daily nitrite intake, one would have to reduce vegetable consumption (not meat consumption) and it’s a known fact that people should consume more vegetables, not fewer.

Moreover, nitrite is recognized as beneficially important in many medical conditions including preventing preeclampsia during pregnancy, promoting wound healing, controlling blood pressure, and helping with successful organ transplantation. Some well-known pharmaceuticals like nitroglycerin and Viagra work by delivering nitric oxide to specific body tissues.

**#10: Nitrite use is still critical to preventing botulism and is the very reason we hear so little about cases of botulism.** It's true that botulism is now a rare occurrence, but that's due in large part to the widespread use of nitrite in commercially prepared meat products since the early part of the 20<sup>th</sup> century. According to CDC, an average of 145 cases are reported in the United States each year. Of these, approximately 15 percent are foodborne and are usually caused by home-canned foods. In fact, since sodium nitrite was approved for use in cured meats in 1925, no cases of botulism have been associated with commercially prepared cured meats.

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