

# Natural Ingredients for Cured and Smoked Meats

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One of the fastest growing categories in the food industry is the natural and organic market segment. In 2003 natural and organic foods accounted for \$16.3 billion dollars of the \$455 billion US Conventional Food market. Within this market segment, meat and poultry products are showing double-digit growth. Organic meat, poultry and seafood products grew by 139% from 2003 to 2004. Additionally, consumers spend an average 30% more for natural meats and anywhere from 15-200% more for organic meats. The organic food growth forecast is 13.4% while the meat, poultry and fish segment is 43.4%. The natural segment has averaged 20% growth during the past decade as retail outlets have become more mainstream and with the emergence of the super naturals such as Whole Foods, Wild Oats, Trader Joe's, Fresh Market, etc. Most Supermarkets now have a healthy, natural and/or organic foods section in their stores.

## Organic vs Natural vs Uncured

Organic and Natural actually is two distinct meat and poultry product categories governed by separate, USDA labeling policies. Both products cannot have added nitrates and nitrites by definition. A separate Code of Federal Regulations (9 CFR 371.71) states that normal cured products (...which nitrate or nitrite is permitted or required to be added) can be made without nitrite or nitrate and labeled with such common or usual name or descriptive name when immediately preceded with the term Uncured. Additionally, No Nitrate or Nitrite Added labeling is also required and Not Preserved-Keep Refrigerated Below 40° F. At All Times. As a result, there are three product categories: natural, organic and simply uncured. All organic and natural products are uncured but not all uncured products are natural or organic.

The organic segment is the most restrictive and is governed by the National Organic Program (NOP), a marketing program within USDA Agricultural Marketing Service

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[www.meatscience.org](http://www.meatscience.org)

([www.ams.usda.gov/nop](http://www.ams.usda.gov/nop)). These requirements apply to the way a product is created, and the products and ingredients must be certified unless on the NOP List of allowed and prohibited substances. In this category, the meat must be raised under organic management, which is strictly prescribed. Also, within the organic category, there are four labeling options relating to the percentage of 100% organic ingredients in the product.

100% Organic

Organic

Made with Organic Ingredients

Less than 70% Organic Ingredients

Ingredients permitted or prohibited are clearly defined in the NOP National List.

The labeling term natural is defined in the USDA Food Standards & Labeling Book, August 2005. Natural may be used on labeling providing the applicant demonstrates,

1. Product does not contain any artificial flavor or flavoring, coloring ingredient, or chemical preservative, or any other artificial or synthetic ingredient (21 CFR 101.22).

2. Product and its ingredients are not more than minimally processed.

The Labeling Book does note that sugar, sodium lactate (from corn), natural flavorings for oleoresins and extractives are acceptable for all natural claims and that other acceptable ingredients are outlined in the NOP National List.

Natural claims do not address the meat portion of the product.

Products with uncured labeling do not necessarily have to conform to either natural or organic requirements, thus this category contains a variety of products depending upon the types of the other ingredients, including the meat. In addition to the No nitrates, Nitrites Added labeling, generally negative claims such as no antibiotics used, no hormones used, etc., refer to the meat component. Some uncured products, however, simply just do not add the nitrates and nitrites, but the meat and all other non-meat ingredients are typical for conventional products.

## Natural Curing

Many uncured, natural and organic meat products to which the chemical additives, nitrate and nitrite, are not added, do undergo a natural curing process whereas natu-

rally occurring nitrates that are very common in the environment are reduced to nitrite in the meat products by specific microorganisms. This ancient process has been around as long as man has been making processed meats with documentation on the salting and curing of meats from the early Egyptians and later the Romans. Initially as an impurity the salt, saltpeter or potassium nitrate, in the salted meat was reduced to nitrite by inherent microorganisms also present. Later spices and vegetables were mixed with the meat providing an additional source of nitrates. Nitrates are part of the Nitrogen Cycle and naturally are present in many foods.

Natural curing requires both a natural nitrate source (seasalt, vegetables, vegetable juices, beet powder, etc.) and specific microorganisms, which reduce enzymatically the nitrate to nitrite in the meat. The time to effect the reaction is dependent upon the concentration of the reactants, the temperature, the pH, and other environmental conditions. During this time interval, the nitrate concentration is reduced as nitrite is formed, however the resulting nitrite reacts immediately with the meat pigments in the form of nitric oxide. The resulting color and flavor of the naturally cured meat product is very similar or preferred to nitrite-added products. Generally, the shelf life of the naturally cured products is somewhat less than the nitrite-added product since less total nitrite is present during the process and due to the absence of other preservative ingredients (ie. phosphate, curing accelerators, antioxidants). Other natural ingredients including vinegar, lemon juice solids, cherry powder and bioprotective microbial cultures can be used to extend shelf-life and provide additional safety hurdles to food pathogens.

In naturally cured products, the uncured labeling might be confusing to the customer since the respective meat products are actually cured by a slower and more traditional process, and residual nitrite can be present. The processor, however, is required to label the specific products as uncured due to existing USDA Regulations.

A recent correspondence with USDA indicated that some Uncured Products on the market do contain naturally occurring nitrites, and that naturally occurring nitrites can be present in vegetable juices and seasalt. Consequently, the claim No Nitrite or Nitrate Added can still be made however there should be disclaimer stating No Nitrates or Nitrites Added except for the naturally occurring nitrites found *in one of the ingredients stated previously*. The No Preservatives claim cannot be used. Unfortunately this revision may add to the confusion and is not necessarily accurate. Many of the current Uncured products do not contain any residual nitrites, seasalt & vegetable juices often do not contain nitrites per se, and many other ingredients and processing techniques, not mentioned, can contain naturally occurring nitrites and nitrates. In my opinion, more accurate terminology would be Naturally Cured with a footnote that such products may contain naturally occurring nitrites

As the markets for uncured, natural, and organic meat and poultry products continue to grow, the definitions, the development, and the use of various approved natural ingredients will continue to evolve.