

Oxidation Management in Meat Using Functional Ingredients

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The processed meat industry is confronted with the task of creating value added products that exceed consumer expectations for taste, are completely safe, are of extremely high quality, and are an excellent value. The complexity of formulas, processing variables and functional ingredients available to achieve this is enormous. It is of key importance for meat and poultry processors to understand the ingredients available for managing oxidation and their rationale for use.

Meat cuts and products can range from the very lean whole muscle chicken breast to the high fat semi-dry sausage. It is a mistake to equate potential for oxidation to the percent fat. Oxidation of leaf fat is only one of several oxidation reactions that occur in meat that will ultimately reduce quality. Oxidation in the lean tissues results in extremely undesirable odors and flavors known as "meat flavor deterioration." Another oxidation reaction occurs in fresh heme pigments, resulting in the bright red bloom of fresh meat changing to a grayish brown. All these phenomena result in quality loss and reduced shelf life. The good news is that these oxidation reac-

tions can be managed with an array of natural and synthetic ingredients.

The natural oxidation inhibitors available include rosemary and sage extracts, and mixed tocopherols. The synthetic choices include BHA, BHT, TBHQ, propyl gallate, polyphosphates, citric acid, ascorbic acid and erythorbic acid. These ingredients function as free radical interceptors, metal chelators or oxygen scavengers.

Ingredient choice requires more information than simply "which performs the best." The product's standard of identity, the ingredient's regulated limits, volatility at various processing temperatures and possible flavor implications, and the shelf-life goals and cost parameters of the finished product are all relevant considerations in a successful commercial setting.

This paper will review the natural and synthetic ingredients that are available to inhibit oxidation in meat and poultry, describe how they function in the product, provide relative performance comparisons where applicable, and discuss the advantages and disadvantages of each.

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