



## Baking and Snack

A common misconception is that oxidation only occurs in products that contain a significant amount of unsaturated fat. The fact is, even low fat or no fat products go rancid, because many factors contribute to oxidation other than fat content. These include exposure to air, exposure to light, processing methods, package design, selection of raw materials and ingredients, etc.

Off odors and flavors develop in oxidized products, when the breakdown products recombine to form new compounds (such as hydrocarbons, aldehydes and ketones) which are not present in the fresh product. These compounds result in major sensory changes in the finished food product. Off odors and flavors can be masked in highly seasoned food products, but food products with little or no seasoning are particularly vulnerable. One taste is all it takes to detect the presence of unpleasant “stale”, “cardboard-like” flavors and rancid odors in an oxidized product.

The effectiveness of oxidation inhibitors (Herbalox® Seasoning and Duralox® Blends) on retarding the rate of oxidative deterioration in pretzels is outline below:

Figure 1 shows the effect of oxidative management systems in delaying the onset of rancidity in pretzels stored at room temperature as measured by hexanal levels. Of key importance is the difference in shape between the control and treatment curves. The control shows a typical oxidation induction curve with a dramatic production of hexanal starting around 20-30 days after packaging. The drop in hexanal levels observed later in the experiment is a common feature as the reactive hexanal marker is converted to other chemical products. The treated samples on the other hand, show only a slow, nearly linear production of hexanal. These differences in hexanal production correlate very well with sensory evaluation results as shown in Figure 2.

The panel preferred the control and the Duralox® treatment samples equally at day 18 (Figure 2). However, by day 29, the blind panel exclusively preferred pretzels containing oxidation management treatments. It is interesting to note that Herbalox® samples were preferred early in the experiment, whereas the Duralox® treated samples became the clear favorite later in the study.

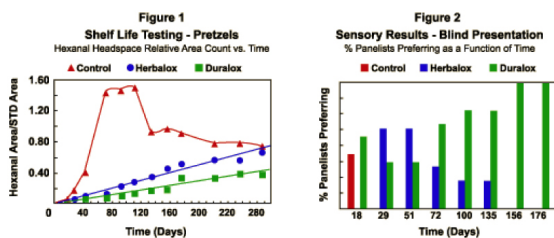


Figure 3 shows that the pattern of hexanal formation in accelerated testing (37°C) is similar to the pattern of hexanal formation of the real time studies. This is important because it allows processors to test oxidation management formulations in their specific applications rapidly and economically.

