MATFORSK

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Dear Dr. Tarantino:

VIEW ON CO PACKAGING OF MEAT

My reason for writing this letter is to express my view regarding the on-going debate (as described in FDA Docket No. 2005P-0459) about the suitability and safety of carbon monoxide (CO) packaging for fresh meat in the USA. I am employed as a meat scientist at Matforsk AS – Norwegian Food Research Institute. My main research area is meat packaging and color, specializing in CO. I have served as a member of a GRAS panel for CO (GRAS Notice No. 83). In addition, I have followed with interest the issues of CO in meat packaging through several visits to the USA over the past years.

I started studying CO in 1996, and at that time I must admit that I was skeptical of CO. However, by acquiring knowledge through later research and experience, I am convinced that CO packaging is safe and the best available packaging method for fresh meat. Since I have the impression that my findings and opinions on CO sometimes have been misunderstood or misquoted, I would like to clarify my view in this letter.

The opponents to CO sometimes claim that we do not know enough about CO. We must not forget that effects of CO on meat were known more than 100 years ago. Much research was conducted in the 1970s and 80s, and numerous studies on CO have been published in the past decade after a growing scientific interest in CO, particularly in the USA. The bright-red color of carboxymyoglobin (COMb) is visually and spectrally very similar to oxymyoglobin, and consumers are not reasonably expected to be able to see a difference. So, COMb is obviously not a "new" color. The use of low amounts of CO for meat packaging does not pose any toxicological hazard to consumers, as agreed by Norwegian, EU and US health authorities. The issue of possibly misleading the

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Matforsk AS – Norwegian Food Research Institute is a leading research centre in the understanding of food quality. The Institute aims to contribute to food research and development in areas of food safety and shelf life, market-oriented product development, interactions between components and ingredients, and rapid analyses. In fulfilling this mission, the institute counts as its customers the food industry, public authorities, educational establishments, research institutions, grocery trade, and institutional households.

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consumers by a stable COMb color extending the time of microbiological spoilage of the meat, is in my opinion a matter of using off-odor and other spoilage indicators, as is typically done for other meat packaging formats and for many other packaged perishable foods. There is now a solid base of scientific literature describing and supporting the use of CO for meat, and I am aware of no meaningful scientific controversy as to the safety of its intended use.

CO packaging of meat has many quality and safety benefits, compared to the other more commonly used packaging method with high oxygen (O_2). Oxidations of all foods should be avoided for health and quality reasons. In contrast to CO, high O_2 systems need addition of antioxidants for proper functioning. Except for lean fish, fresh meat is the only food where high O_2 is used deliberately in modified atmosphere packaging.

Low CO atmospheres (0.4 %) for case-ready meat were used continuously in Norway from 1985 to 2004. The technology of low CO packaging was well proven in Norway during this period. In the latter years, low CO packaging had a market share of about 60 % of all fresh meat sold in Norway. The use of low CO was a success in Norway and it benefited consumers, retailers and the meat industry. To my knowledge, Norway had no cases of food illness or poisoning that could be related to the use of low CO. The Norwegian food control authorities had no objections to CO during the period it was used. Norway has to adapt to EU food regulations due to trade agreements. In the EU, CO has not been permitted as an additive on the list of food additives. The Norwegian meat industry applied unsuccessfully for having CO included on the list. So, it is misleading to say that the EU banned CO, but the EU did not allow CO to be included to the additive list, after a request from a non-EU country. An EU scientific committee stated that it had a positive view of CO packaging of fresh meat, but that temperature control is vital, as for all perishable foods.

My sincere recommendation to the US food control authorities is to maintain the GRAS status of CO for meat packaging.

Sincerely
Matforsk AS

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LETTER ON CO PACKAGING

Enclosed please find a copy of a letter to Dr. Laura Tarantino, FDA, about CO packaging.

Yours faithfully
Matforsk AS

Oddvin Sørheim, Ph.D.

Enclosure: copy of letter