



October 6, 2004

## Tuna's Red Glare? It Could Be Carbon Monoxide

By JULIA MOSKIN

**B**UYERS of fresh tuna, whether at the sushi bar or the supermarket, often look for cherry-red flesh to tell them that the fish is top-quality. But it has become increasingly likely that the fish is bright red because it has been sprayed with carbon monoxide.

The global seafood trade has expanded so much over the last decade that tuna, once a seasonal delicacy, is available year-round. But getting it to consumers while it still looks fresh is difficult. Tuna quickly turns an unappetizing brown (or chocolate, as it is called in the industry), whether it is fresh or conventionally frozen and thawed.

Carbon monoxide, a gas that is also a component of wood smoke, prevents the flesh from discoloring. It can even turn chocolate tuna red, according to some who have seen the process.

People in the seafood industry estimate that 25 million pounds of treated tuna, about 30 percent of total tuna imports, were brought into the United States last year, mostly from processors in Southeast Asia. Retailers in the United States buy it already treated.

The Food and Drug Administration says the process is harmless. But Japan, Canada and the countries of the European Union have banned the practice because of fears that it could be used to mask spoiled fish.

Carbon monoxide preserves only the color of the fish, not its quality. Suppliers and retailers who use the treated fish say the process allows them to sell high-quality, flash-frozen fish that still looks good enough to eat. Jerry Bocchino, an owner of Pescatore, a fish store in Grand Central Market in New York, said that his sales of tuna have tripled since he switched to the treated kind two months ago.

"With fresh tuna, you're always racing the clock to keep the color and keep it from spoiling," Mr. Bocchino said. "And once it turns brown, no one wants to buy it. People love the color of this stuff."

Tim Lauer, a seafood dealer in the Minneapolis-St. Paul area, said that most sushi bars and supermarkets there have switched to the product since it was introduced in the late 1990's. "I've lost all my sushi customers for tuna, since I won't sell it," he said.

Just because a slice of tuna is brown, it does not mean it is not fresh. And other factors determine the color, including the fat content, species and cut. The finest fresh bluefin, which sells for up to \$40 a pound at Tokyo's wholesale fish markets, is not a deep red but a pale pink because of the fine web of white fat that permeates the red flesh. Top-quality toro is often a brownish red.

But for most consumers around the world, vendors say, lollipop-red flesh signals freshness and quality. Tuna treated with carbon monoxide is bright red when first defrosted, and fades within a couple of days to a watermelon pink. But "you could put it in the trunk of your car for a year, and it wouldn't turn brown," said one sales representative at Anova Foods, a distributor in Atlanta, who spoke on condition of anonymity.

The use of carbon monoxide in food is hardly new, as any barbecue or smoked salmon fan should know. (Wood smoke contains carbon monoxide.) But the gas used by many overseas producers, although tasteless, is more concentrated; it can be as much as 100 percent carbon monoxide, said Bill Kowalski, an owner of

## Hawaii International Seafood.

American processors like Hawaii International and Anova Foods are racing to market their own versions of the technology, using wood smoke that is filtered to remove the elements that make food taste smoky. These processors use lower concentrations of the gas and tag their product with trademarked names like Tasteless Smoke, ClearSmoke and Crystal Fresh.

Opinion about carbon-monoxide-treated tuna is sharply divided, and illustrates the complex issues that consumers have to wade through at the fish market.

To supporters like Mr. Bocchino, Mr. Kowalski and Dr. Steve Otwell, a researcher at the University of Florida, carbon monoxide treatment is an important advance in food safety that accommodates the realities of the marketplace. Instead of fresh tuna that is likely to spoil quickly, they reason, consumers get a high-quality frozen product that can be transported safely, thawed when needed, and keep its fresh look. "The industry scrambles to get fresh tuna to market, but the reality is that by the time a long-line Pacific tuna makes it to an American supermarket, it could be as much as 30 days out of the water," Dr. Otwell said. "That's much more of a health risk than treated tuna, as long as the raw material is good and the treatment is controlled."

Roman Choudhury, the manager of two sushi restaurants in Manhattan, buys treated tuna when he cannot get it fresh, particularly for tuna rolls. "At my price point, it's almost impossible to have a steady supply of fresh tuna," he said. "And people always, always want tekka maki."

Detractors call the process risky and dishonest. "There's no reason to do this other than to deceive the consumer," Mr. Lauer said. "There are natural solutions to the problem of browning."

One is ultra-low-temperature freezing, which keeps tuna at about 80 degrees below zero for months or even years without browning. But maintaining such low temperatures during the long trip from boat to plate is a very expensive proposition.

Caroline Smith DeWaal, food safety director for the Center for Science in the Public Interest, a nutrition advocacy group, said, "Anything that masks the true age of a piece of fish is a public safety risk."

As tuna ages, it becomes more likely to cause scombrototoxin poisoning, which is rarely severe or fatal. It is the most common form of food poisoning from seafood in the United States, the Center said.

The F.D.A. has put carbon-monoxide-treated tuna on its list of substances generally regarded as safe. The agency permits its use to preserve the color of fresh tuna, not to enhance brown tuna, and requires stores to label treated fish. But they often do not.

What does all this mean at the market? Any tuna that is hot pink has probably been treated with carbon monoxide. Tuna that is bright red may be extremely fresh, and therefore very expensive, or may have been treated with the gas.

"Outside of Hawaii bright red tuna that is selling for less than \$12 a pound is probably treated," Mr. Lauer said. "On the other hand, there's nothing to stop people from selling treated tuna for \$20 a pound if they can get away with it."