

Could additives in hot dogs affect incidence of colon cancer?

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The addition of ascorbate (vitamin C) or its close relative, erythorbate, and the reduced amount of nitrite added in hot dogs, mandated in 1978, have been accompanied by a steep drop in the death rate from colon cancer, according to data presented at the 10th AACR International Conference on Frontiers in Cancer Prevention Research, held Oct. 22-25, 2011.

However, the incidence rate for colon cancer has apparently not changed much since 1978, according to 2011 data from the SEER Cancer Statistics Review from the [National Cancer Institute](#).

"It was proposed that N-nitroso compounds in hot dogs and other processed meats can cause colon cancer," said Sidney S. Mirvish, Ph.D., professor emeritus at the Eppley Institute for Research in Cancer and Allied Diseases at the University of Nebraska Medical Center in Omaha. "We found that the level of total apparent N-nitroso compounds in hot dog links prepared in our laboratory fell as increasing levels of sodium erythorbate were included in the hot dog links."

Mirvish and colleagues discussed the view that colon cancer was induced by components of the apparent nonvolatile N-nitroso compounds that occur in processed (nitrite-preserved) meat. Hence, Mirvish and colleagues investigated the effect of varying the erythorbate level on the N-nitroso compound content of hot dogs.

They found that the current level of erythorbate (500 milligrams per

kilogram) added to hot dogs reduces the N-nitroso compounds to 2 nanomoles per gram compared with 180 nanomoles per gram when erythorbate was not used.

"When erythorbate was not added, 80 percent of the apparent N-nitroso compounds were found to be due to nitrosothiols, which are probably harmless, still leaving 40 nanomoles per gram that were attributed to possibly carcinogenic N-nitroso compounds," Mirvish said.

If the level of N-nitroso compounds was an important cause of colon cancer, "the drop in N-nitroso compound content caused by the mandated changes in [processed meat](#) should have been accompanied by a drop in the incidence of colon cancer," Mirvish said.

In fact, since the mandated changes were introduced 33 years ago, the death rate for colon cancer has dropped sharply. "This may have been due mostly to earlier detection and better treatment of this disease," Mirvish said.

Mirvish concluded that the role of hot dog-derived N-nitroso [compounds](#) in the causation of [colon cancer](#) remains unclear.

Provided by American Association for Cancer Research

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