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New Study Suggests Artificial Sweetener Causes Cancer in Rats at Levels Currently Approved for Humans
Report in *Environmental Health Perspectives* calls for reevaluation of acceptable limits of aspartame consumption

[Research Triangle Park, NC]] A statistically significant increase in the incidence of malignant tumors, lymphomas and leukemias in rats exposed to varying doses of aspartame appears to link the artificial sweetener to a high carcinogenicity rate, according to a study accepted for publication today by the peer-reviewed journal Environmental Health Perspectives (EHP). The authors of the study, the first to demonstrate multipotential carcinogenic effects of aspartame administered to rats in feed, called for an "urgent reevaluation" of the current guidelines for the use and consumption of this compound.

"Our study has shown that aspartame is a multipotential carcinogenic compound whose carcinogenic effects are also evident at a daily dose of 20 milligrams per kilogram of body weight (mg/kg), notably less than the current acceptable daily intake for humans," the authors write. Currently, the acceptable daily intake for humans is set at 50 mg/kg in the United States and 40 mg/kg in Europe.

Aspartame is the second most widely used artificial sweetener in the world. It is found in more than 6,000 products including carbonated and powdered soft drinks, hot chocolate, chewing gum, candy, desserts, yogurt, and tabletop sweeteners, as well as some pharmaceutical products like vitamins and sugar-free cough drops. More than 200 million people worldwide consume it. The sweetener has been used for more than 30 years, having first been approved by the FDA in 1974. Studies of the carcinogenicity of aspartame performed by its producers have been negative.

Researchers administered aspartame to Sprague-Dawley rats by adding it to a standard diet. They began studying the rats at 8 weeks of age and continued until the spontaneous death of each rat. Treatment groups received feed that contained concentrations of aspartame at dosages simulating human daily intakes of 5,000, 2,500, 500, 100, 20, and 4 mg/kg body weight. Groups consisted of 100 males and 100 females at each of the three highest dosages and 150 males and 150 females at all lower dosages and controls.

The experiment ended after the death of the last animal at 159 weeks. At spontaneous death, each animal underwent examination for microscopic changes in all organs and tissues, a process different from the aspartame studies conducted 30 years ago and one that was designed to allow aspartame to fully express any carcinogenic potential.

The treated animals showed extensive evidence of malignant cancers including lymphomas, leukemias, and tumors at multiple organ sites in both males and females. The authors speculate the increase in lymphomas and leukemias may be related to one of the metabolites in aspartame, namely methanol, which is metabolized in both rats and humans to formaldehyde. Both methanol and formaldehyde have shown links to lymphomas and leukemias in other long-term experiments by the same authors.

The current study included more animals over a longer period than earlier studies. "In our opinion, previous studies did not comply with today's basic requirements for testing the carcinogenic potential of a physical or chemical agent, in particular concerning the number of rodents for each experimental group (40-86, compared to 100-150 in the current study) and the termination of previous studies at only 110 weeks of age of the animals," the study authors wrote.

The authors of the study were Morando Soffritti, Fiorella Belpoggi, Davide Degli Esposti, Luca Lambertini, Eva Tibaldi, and Anna Rigano of the Cesare Maltoni Cancer Research Center, European Ramazzini Foundation of Oncology and Environmental Sciences, Bologna, Italy. Funding for the research was provided by the European Ramazzini Foundation of Oncology and Environmental Sciences, Bologna, Italy. The article is available free of charge at **http://ehp.niehs.nih.gov/docs/2005/8711/abstract.html**.

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