

**Aspartame induces lymphomas and leukaemias in rats
Aspartame, a leukaemogenic compound**

**European Journal of Oncology, Vol. 10, No. 2, pp. 00-00, 2005
IN PRESS**

Morando Soffritti, Fiorella Belpoggi, Davide Degli Esposti, Luca Lambertini

Cancer Research Centre, European Ramazzini Foundation of Oncology and
Environmental Sciences, Bologna, Italy

FROM ABSTRACT:

Aspartame (APM) is a widely used artificial sweetener consumed by hundreds of millions of people around the world.

It is found in more than 6,000 products, including soft drinks, chewing gum, candy, yoghurt, tabletop sweeteners and some pharmaceuticals such as vitamins and sugar-free cough drops.

Dietary surveys, performed among aspartame consumers, have shown that the average aspartame daily intake in the general population ranged from 2 to 3 mg/kg b.w. and was even more in children and pregnant women. **[Disturbing]**

Aspartame, a widely used artificial sweetener, was administered with feed to male and female rats (100-150/sex/group), 8 weeks-old at the start of the experiment, at concentrations of 100,000; 50,000; 10,000; 2,000; 400; 80 and 0 ppm.

Treatment lasted until spontaneous death of the animals.

In this report we present the first results showing that aspartame, in our experimental conditions, causes a statistically significant, dose-related increase in lymphomas and leukaemias in females.

No statistically significant increase in malignant brain tumours was observed among animals from the treated groups as compared to controls.

THESE AUTHORS ALSO NOTE:

In rodents and humans, aspartame is metabolised in the gastrointestinal tract into three constituents: aspartic acid, phenylalanine and methanol.
[Important, methanol is a toxin!]

“Three long-term feeding carcinogenicity bioassays on aspartame were performed on rats, and one on mice, during the 1970s. Overall, the carcinogenicity studies were considered negative, but it must be noted that these studies did not comply with the basic requirements which must nowadays be met when testing the carcinogenicity potential of a chemical or physical agent. Because of these

limitations, we decided to perform a mega-experiment following the currently accepted Good Laboratory Practices. In the present paper we are reporting our first results on the incidence of haemolymphoreticular malignancies (lymphomas and leukaemias) and malignant brain tumours.”

The aspartame used was produced by Nutrasweet.

The amount of aspartame used in these animals was chosen to simulate an assumed daily intake by humans. Aspartame was added to the standard Corticella diet, used for 30 years at the laboratory of the Cancer Research Centre (CRC) of the European Ramazzini Foundation (ERF), at concentrations of 100,000; 50,000; 10,000; 2,000; 400; 80; or 0 ppm. Aspartame treated feed was administered to 100-150 (of each sex) 8 week old rats at the start of the experiment, and the treatment lasted until spontaneous death. Control animals received the same feed without aspartame.

Upon death, the animals underwent complete necropsy. Histopathology was routinely performed on the following organs and tissues of all animals from each group:

skin and subcutaneous tissue, mammary gland, the brain, pituitary gland, salivary glands, cranium (five sections, with oral and nasal cavities and external and internal ear ducts), tongue, thyroid, parathyroid, pharynx, larynx, thymus and mediastinal lymph nodes, trachea, lung and mainstem bronchi, heart, diaphragm, liver, spleen, pancreas, kidneys, adrenal glands, oesophagus, stomach, intestine (four levels), urinary bladder, prostate, gonads, interscapular brown fat pad, subcutaneous and mesenteric lymph nodes and other organs or tissues with pathological lesions.

RESULTS

“No differences in mean body weight were observed among treated and control groups in either males or females.”

“No substantial difference in survival was observed among treated and control groups, males or females.”

Yellowing of the coat was observed in animals exposed to aspartame, a change that is known to occur by exposing rats to formaldehyde in their drinking water. **[This is important because it is known that aspartame metabolizes into formaldehyde].**

“The data indicate that aspartame causes a statistically significant increase in the incidence of lymphomas and leukaemias in females,” at concentrations of 100,000; 50,000; 10,000; 2,000 and 400 ppm as compared to untreated controls. “This increase is dose-related.”

“An increase was also observed in females treated with 80 ppm and in males treated with the highest dose.”

"Sparse malignant brain tumours were observed among males and females in the treated groups and none in the controls."

CONCLUSIONS

"In our experimental conditions, it has been demonstrated, for the first time, that aspartame causes a dose-related statistically significant increase in lymphomas and leukaemias in females at dose levels very near those to which humans can be exposed."

"Moreover, it can hardly be overlooked that at the lowest exposure of 80 ppm, there was a 62% increase in lymphomas and leukaemias compared to controls." **[Very Important]**

"When compared to the concurrent control group, an increase in the incidence of these neoplasias was also observed in males exposed to the highest dose."

"These experiments demonstrate that the increase in lymphomas and leukaemias, observed in the aspartame study, could be related to methanol, a metabolite of aspartame, which is metabolised to formaldehyde and then to formic acid, both in humans and rats." **[Very Important]**

"In fact we have shown that:

- 1) Methanol administered in drinking water increased the incidence of lymphomas and leukaemias in female rats;
- 2) The same effect was induced in females treated with the gasoline oxygenated additive methyl-tert-butyl-ether (MTBE), which is also metabolised to methanol;
- 3) An increase in the incidence of lymphomas and leukaemias was also observed in females treated with formaldehyde."

"These results further highlight the important role that formaldehyde has on the induction of haematological malignancies in rodents."

Moreover, a recent reevaluation of the carcinogenicity of formaldehyde by the International Agency for Research on Cancer (IARC), found strong evidence of an association with leukaemias in humans.

"Since the results of carcinogenicity bioassays in rodents have been shown to be a consistent predictor of human cancer risk, the first results of our study call for urgent re-examination of permissible exposure levels of aspartame in both food and beverages, especially to protect children." **[WOW!]**

[BACKGROUND:

Methanol = methyl alcohol = wood alcohol, is a poisonous liquid used as an antifreeze, solvent, fuel, and was used by the Egyptians for embalming.

Methanol is metabolized into formaldehyde, and formaldehyde is metabolized into formic acid.

Methanol, formaldehyde, and formic acid are all extremely toxic especially to fetal tissues {yet pregnant mothers are the greatest users of aspartame}. These compounds cause symptoms such as headache, dizziness, nausea, lack of coordination, confusion, and drowsiness.]

**THIS ARTICLE GENERATED THE FOLLOWING PUBLIC WARNING:
Center for Science in the Public Interest
For Immediate Release: July 27, 2005
Aspartame: New Study Renews Cancer Concern, Says CSPI**

"The Food and Drug Administration should immediately review the safety of the artificial sweetener aspartame, and possibly ban it, in light of a new study published in the European Journal of Oncology."

"The study, conducted in Italy, found statistically significant increases in lymphomas and leukemias among female rats given aspartame."

"The smallest amount of aspartame (20 milligrams per kilogram of body weight) that caused a significant increase in cancer incidence is in the ballpark of what many people consume."

"At a minimum, the government should conduct new animal studies of aspartame."

"Aspartame, also sold as Equal and NutraSweet, is used in Diet Coke, Diet Pepsi, and thousands of other foods and is consumed by 200 million people in the United States and around the world, according to the industry's Calorie Control Council."

"The FDA immediately should ask the government's National Toxicology Program to conduct new animal studies to assess the cancer risk from aspartame. As a precautionary measure, in the several years it would take to design and conduct such studies, the FDA should consider ordering aspartame off the market," said CSPI executive director Michael F. Jacobson.

Importantly, this study was conducted independently, while "virtually all of the previous research was sponsored by the makers of aspartame."

"(In 1996, the Minneapolis Star Tribune reported that the FDA repeatedly stopped the National Toxicology Program from conducting lifetime animal tests of aspartame.)" **[Amazing]**

"The authors of the Italian study call for urgent re-examination of permissible exposure levels of [aspartame] in both food and beverages, especially to protect children."

KEY POINTS FROM DAN MURPHY

- 1) Aspartame is a widely used artificial sweetener consumed by hundreds of millions of people around the world. The aspartame used in this study was Nutrasweet. Another brand name for aspartame is Equal.
- 2) Aspartame is found in more than 6,000 products, including soft drinks, chewing gum, candy, yoghurt, tabletop sweeteners and some pharmaceuticals such as vitamins and sugar-free cough drops.
- 3) In the general population, children and pregnant women consume the most aspartame. **[Disturbing]**
- 4) In humans, aspartame is metabolised into aspartic acid, phenylalanine and methanol. Methanol is then metabolized into formaldehyde.
- 5) The original studies in the 1970s on aspartame safety were done by the companies that make aspartame, and "these studies did not comply with the basic requirements which must nowadays be met when testing the carcinogenicity potential of a chemical."
- 6) The amount of aspartame used in this study was chosen to simulate the daily intake by humans.
- 7) In this study, aspartame caused a statistically significant increase in the incidence of lymphomas and leukaemias, primary in females rats. This increase is dose-related.
- 8) The lowest exposure of aspartame at 80 ppm caused a 62% increase in lymphomas and leukaemias compared to controls. **[Scary]**
- 9) These authors believe that aspartame caused these cancers because methanol, a toxin, is metabolised to formaldehyde, also a toxin, and then to formic acid, another toxin.
- 10) These authors "call for urgent re-examination of permissible exposure levels of aspartame in both food and beverages, especially to protect children." **[WOW!]**
- 11) "The Food and Drug Administration should immediately review the safety of the artificial sweetener aspartame, and possibly ban it."
- 12) The FDA should immediately order aspartame off the market until the government's National Toxicology Program conducts new animal studies to assess the cancer risk from aspartame.