



Saccharin deemed “not hazardous” in United States and abroad

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BACKGROUND

Banned in 1981, saccharin has long been considered carcinogenic because it produced bladder tumours in rats. Saccharin is now unbanned, with more than 100 countries worldwide legitimately allowing saccharin as a food sweetening additive¹, a situation that warrants further comment.

Saccharin, being 300 times sweeter than sugar, is used in many foods and drinks, and compared with carbohydrate-rich, high-calorie sweetened foods, it ensures sustained organoleptic taste with minimal calories. Saccharin may be experimentally carcinogenic in animals, but the fact remains that many other carcinogenic molecules have long been known to be ubiquitously present in foods and drinks. But the cardinal principle affecting policy relating to all poisons—and their biologic consequences—is that their effects on vital tissue are dose-dependent. Selected putative examples include carcinogens such as trichloroethylene solvent (found in instant decaffeinated coffee), diethylstilbestrol [DES (in beef liver)], secondary amines—nitrosamines—and benzopyrenes (in barbecued meats), aflatoxin (in agricultural products), tannins (in beverages, tea, and wine), thiourea (in cabbage), zearalenone (in corn), ethyl carbamate (in most fermented products including bread, wine, and beer), patulin (in flour, oranges, and apple sauce), and nitrates and nitrites (in vegetables, meats, fish, milk, and eggs)².

CHALLENGES ARISING AND DISCUSSION

Survival reality demands realistic assessments of dose–response for all ingested chemicals. The absurdity of not considering dose–response relationships, particularly with carcinogens, is highlighted here, with some interpretations extrapolated from known doses of carcinogens³:

- Daily consumption of 50 million cups of instant decaffeinated coffee would be required to equal the dose of trichloroethylene solvent needed for tumour formation in mice.
- To ingest 1 mg DES, a person would have to eat 20,000 pounds of beef liver from cattle fed that hormone, and yet 1 mg DES is used therapeutically by humans to prevent and control prostate cancer, a treatment associated with hardly any cancer risk.
- It would take consumption of some 82,000 pounds of bacon daily to reach the threshold levels of *N*-nitrosopyrrolidene found to cause cancer in rats.

As for saccharin, humans would need to drink the equivalent of 800 twelve-ounce diet sodas with saccharin daily to reach the carcinogenic doses that induced rat bladder cancer. Saccharin was banned in 1981 because of fear of *possible* carcinogenesis. Experimentally, no harmful effects on humans were observed with consumption of 5 g saccharin daily over 5 months³. To produce tumours in rats, saccharin is administered in *grams* per kilo, compared with the *milligrams* per kilo used when saccharin acts as a sweetener for humans. In a 3000-calorie North American diet, daily consumption approaching 0.5 g (500 mg) by a single individual is highly unlikely.

CONCLUDING REMARKS

Diabetics depend on saccharin as a sugar replacement, and overweight people also rely on saccharin for weight control. Apatite satiety from artificial sweetness encourages reduction of calorie intake.

The U.S. National Toxicology Program and The International Agency for Research on Cancer support the Environmental Protection Agency's conclusion that saccharin is safe “at human levels of consumption” because, after assessing many saccharin-sweetened human foods, no association between saccharin and cancer could be established.

The World Health Organization and the E.U. Scientific Committee for Food deem saccharin safe at human levels of consumption. Consequently,

saccharin has been removed from the list of substances hazardous to humans.

Health care workers should always exercise a sense of pragmatic reality when dietary advice is sought by—or offered to—patients. Consumption of non-processed, fresh foods is always preferable to consumption of artificially preserved or flavoured nutrition. Fresh fruits and vegetables, and first-class sources of protein should ensure a healthy balanced diet. Avoiding immediate or chronic exposure to any carcinogen is good advice, if it is at all feasible.

CONFLICT OF INTEREST DISCLOSURES

The author has no conflicts of interest to declare.

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