

## Editorial

# Cola, controversies, and carcinogenesis

Colas and controversies have always co-existed. It was colas as contraceptive in late sixties and now it is pesticides in colas in India. The link between obesity and colas is another concern which is controversial. The sale of colas in the west has gone down in contrast to developing countries. Colas are the only beverages, which are sold without declaring all of their contents. This makes it difficult to assess the total impact of colas on health including carcinogenicity.

A storm brewed in India, following a report by CSE, it reported higher pesticide contents in the colas. Average Coca-Cola brands showed 11.05ppb of pesticides, that is 22.1 times the BIS standard, while Pepsi cola brands showed 25.4 times the above BIS standard. Lindane, Heptachlor, Organochlorines, Chlorpyrifos, Malathion and Organophosphates were some of the pesticide residues found in these cola samples. Pesticides are classified as extremely hazardous (Parathion), highly hazardous (Aldrin) moderately hazardous (Cypermethrin) and slightly hazardous (Malathion). The example in the bracket are indicative of the long list of molecules only in pesticides which can be hazardous. It is evident that both pesticides of all the hues were detected in colas.

Carcinogenesis is a multi-step and multi-factorial process. There are innumerable known and unknown variables. Thus causative association of carcinogenic agent is always statistical in nature. Proving conclusively any association between a causative agent and cancer is beyond the capacity of the present day science, only a strong link can be established. The available proof linking pesticide exposures to cancer must be understood in the light of above observations.

Clark Heath, a member of Canadian cancer society and NIH was one of the panelists who reviewed the risk assessments of environmental carcinogens including pesticides.<sup>[1]</sup>

The panel concluded that the risk of new cancer due to pesticides is not high enough to change the current levels for pesticides. In contrast Petre Montague quote a survey of 91 human studies. Where seventy-five of 91 studies suggested a

connection between exposure to pesticides and lymphomas. Beginning in the late 1970's there have been reports linking pesticides to leukemia in children. NIH in 1987 demonstrated a four-fold increase in leukemia in children living in pesticide treated homes (Peters, John, Journal of the National Cancer Institute; July, 1987).

The Lymphoma foundation study has convincingly demonstrated a link between pesticides and Lymphoma in children. Both maternal and paternal exposure also increased the chances of cancer in the offspring. It is believed that unprecedented increase in breast cancer in New Zealand and USA by almost 60% can be partially explained by increased permeation of pesticides in the environment.

The current controversy about colas is about the pesticide content which is higher than certain recommended standards. Pesticides have a potential to inflict health hazards like congenital anomalies to Parkinson's and cancer. Like any carcinogenic agent the length of exposure, concentration and the nature of carcinogenic agent decides the outcome.

The issue is one of ethics and public health besides being a challenge to an epidermatologist as well as a scientist. The cola companies and all stakeholders of public health should hold an open debate to arrive at an appropriate conclusion about acceptable levels of pesticides. Otherwise colas will always face controversies be it about being a good post coital douche, or of cola being an effective pesticides. Chemical industry can learn a lot from nuclear industry in ensuring safe guards. The pesticide content or any other chemical with a potential to be a health hazard should be reduced to the lowest extent that is possible. Penalties should be assigned to non essential beverages or food items so that the pesticides level are the lowest possible. Are colas carcinogenic? "No" But if level of pesticides go up, may be they will become one!

## REFERENCE

1. Clark W. Pesticides and Cancer Risk; Heath. Cancer 1997;80: 1887-8.

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