Public opinion on GM food: Will the scientists please help?

Over the last few years, there have been a number of news items in papers with regard to genetically modified (GM) foods and crops all over the world. India is now on the threshold of accepting GM foods. We have entered into an agreement with the USA (linked to the nuclear talks held during President Bush’s visit to India earlier this year) on agricultural biotechnology. What are the implications of this agreement? What will be India’s gains due to this agreement? What are the further implications with regard to our research results, natural biodiversity and national genetic wealth?

The biotech revolution in agriculture has been termed as the Second Green Revolution by President Bush on his visit to India, and variously as the Evergreen Revolution and Gene Revolution by others. In the face of this hype has caution been thrown to the winds? How is it being ensured that GM foods will be safe for human consumption? Proponents of GM foods use the ‘principle of substantial equivalence’ to justify their claim that there is no need to certify that GM foods are safe, just as there is no need to justify that natural foods are safe.

Recently, brinjal has been in the news as the genetically modified BT Brinjal awaits government approval for large scale field trials in India. This is the first food crop to be approved in India, though GM foods have probably been in the country for some time now (possibly American Corn, available as a snack in kiosks across metros, papaya and imported soya oil). The multinational Monsanto had been given approval to import GM corn seeds for limited field trials. Is there any data on how the crops fared and what is being done with the corn grown? More importantly, how does the general public feel about their unknowingly ingesting material which is untested and has been rejected as a cautionary measure by a majority of countries in Europe and countries like Sri Lanka? Is it feasible or practical to ask for labelling of GM foods when it is clear it would be almost impossible to enforce?

The government approvals committee of the Ministry of Environment, GEAC (http://www.envfor.nic.in/divisions/csary/gee/geac_home.html) extended the date for registering objections to the approval for BT Brinjal to 15 July 2006. Unfortunately there is not enough time to represent to the GEAC now, but some representations have been made by concerned NGOs. It is important however to make more information available to help people make informed decisions which can then be communicated to appropriate authorities. Current Science is widely read and respected in the scientific community. I would like to urge scientists and knowledgeable readers to enter into a debate to inform people and form a nucleus of public opinion with regard to this urgent issue. If possible, protocols for the testing of GM Foods prior to approval could be outlined. As yet, approvals for genetically engineered materials are within the purview of the environment ministry. With GM foods it is necessary that additional approvals or guidelines be introduced through the Department of Public Health.

APARNA BASU
B 303, Nayantara, Sec 7, Plot 8B, Dwaraka, New Delhi 110 075, India
E-mail: aparnabasu.dr@gmail.com

Ministry of Earth Sciences and the Geological Survey of India

It is indeed gratifying that Government of India has approved the formation of the Ministry of Earth Sciences on 9 May 2006 incorporating the Indian Meteorological Department and Ministry of Ocean Development as its constituent departments. Earth Science is the field of study concerned with our living planet. Earth Science basically includes study of the lithosphere (the upper solid portion of the earth), the hydrosphere (the ice and water cover near the earth’s surface), the atmosphere (the gaseous envelop surrounding the earth), and the biosphere (the zone of earth supporting life) and who else is better equipped than a geologist to study the various aspects of earth sciences? It is really strange that the Geological Survey of India, the premier organization of earth science studies in the country, having an enormous geoscientific database of high quality generated over a period of 155 years, has not been made a constituent department of the newly formed Ministry. How the premier earth sciences organization, which is the second oldest (established in 1851) and the second largest Geological Survey Organization in the world, could be left out of the Ministry of Earth Sciences/Earth Commission defies logic.

The GSI Charter (The Gazette of India, Extraordinary, Section 1, No. 146, dated 13 June 2003), that contains brief details of the functions and responsibilities of the Geological Survey of India, clearly mentions that in addition to preparation/updation of geological, geophysical and geochemical maps of the country and its offshore mineral exploration and conducting research in earth sciences, the GSI is responsible for creation and main-

CURRENT SCIENCE, VOL. 91, NO. 6, 25 SEPTEMBER 2006
CORRESPONDENCE

indirectly related to the earth sciences wherein the GSI plays an important role in granting environmental clearance for various mega projects.

The role of the GSI in assessment and mitigation of natural hazards, delineation of areas susceptible to environmental degradation and in supply of the geological inputs for major geotechnical projects is well known. GSI generates reliable geo-scientific data pertaining to the earth by surface surveys and drilling. It conducts marine surveys for assessment of seabed mineral resources. It is also entrusted with compilation of the earthquake database for the country, preparation of seismicity maps for seismic hazard studies and seismic microzonation, and landslide hazard zonation for future planning.

One of the greatest assets of the Geological Survey of India is its long-term tradition of excellence in unbiased earth science research. Part of that legacy is in its commitment to provide geochemical information necessary to confront urgent environmental challenges. Geochemistry provides information on the distribution of chemical elements to help, define and understand environmental problems. This information is then utilized to solve relevant problems in the society.

As the primary National Earth science agency, the GSI leads in the collection, interpretation, and dissemination of earth science information. Only geo-sciences provides assets for sustainable development. Climate forecast by the IMD is strengthened by use of reliable geological data. The assessment and monitoring of the impacts of natural and man-made disasters/hazards has stressed the need for prediction and prevention tools. As geological processes form the basis for evaluating the effects of such hazards, prediction models have to be dependent on geo-scientific data.

Keeping in view the GSI’s expertise in seismic-prone areas, a semi-autonomous body under the IMD has recently been set up in collaboration with GSI to evaluate and propagate awareness on risks related to seismic hazards and to carry out microzonation mapping on 1 : 10000 scale in the near future. In this joint initiative of Government of India and UNDP, seismic microzonation studies of 38 cities and urban agglomerations in different seismic zones have been taken up under the umbrella of the DST.

An ‘Expert Committee’ constituted by the Government in 2002 specifically recommended formation of such a Ministry with GSI as a nodal constituent and an executive arm with the D.G. GSI as its Secretary. As per the news item (10 May 2006, Express News Service), this role is now reposed to proposed ‘Earth commission’ consisting of 12 members with the Secretary of Ministry of Earth Science as its Head. But no mention of the Geological Survey of India has been made. This is naturally an anomaly which needs to be redressed urgently. The vision document of the Department of Science & Technology on the issue of Earth Sciences has grouped several subjects which are the key operational areas of the Geological Survey of India.

GSI is the leader in all the fields of earth sciences employing over 2000 eminent earth scientists and is way ahead of the combined strengths of scientists in IMD and the Department of Ocean Development. Further, no mining is done by GSI which is the domain of the Ministry of Mines. It further stresses the need for inclusion of GSI in the Ministry of Earth Sciences.

In view of GSI’s pivotal role in sustainable development, its serious concern over environmental change and its unique contributions in studies related to all the physical aspects of earth and natural hazard prevention and mitigation, it is urgently required that the policy makers incorporate GSI in the newly formed Ministry of Earth Sciences at the earliest in the interest of science.

Vikram Rai
Geological Survey of India,
Scientific Officers’ Association,
‘Vasundhara’, Aliganj,
Lucknow 226 024, India
e-mail: raivikram54@rediffmail.com

Regulation of NF-kB

This correspondence is in response to the review article by Tripathi and Aggarwal with a brief insight into the approaches that can be taken in the context of its modulation of oral inflammation and apoptosis, since these biological phenomena have been associated in several oral diseases.

As described in the review, an understanding of the intricate regulation of NF-kB is pivotal, since its induction is also involved in stress, inflammation and paradoxical cellular context-dependent role in apoptosis. One of the major inflammatory side effects of chemotherapy hampering optimal dosage combinations and regimens is oral mucositis.

Topical corticosteroids have been the drug of choice for treating oral mucositis, which is a side effect of chemotherapy. However, their limitations in terms of toxicity and generalized immunosuppression, should be borne in mind, in the development of complementary and alternative medical approaches as well as targeted modulation of its activity using molecular approaches. In this regard, there is an obvious need to adopt a combinatorial approach. For example, corticosteroids have been shown to inhibit fibroblast proliferation and fibrosis, while apoptosis is selectively toxic to cancer cells without affecting normal fibroblasts. This approach could selectively modulate the fibroblast-mediated inflammation, using corticosteroids, while specifically targeting cancer cells, using biomolecules, like apoptosis. However, the efficacy and feasibility of such an approach should be tested in vivo, with a large sample size, before any firm conclusions can be drawn and hence, more studies are warranted and this is consistent with the currently accepted Evidence-Based Research (EBR) approach. Different pathways of regulation of NF-kB, for example IKK-β, have already been identified and elaborated upon in this and other reviews.

While there are well-documented differences, between mice and humans, in the biological responses with respect to teeth in the oral cavity, mutations (transgenic mice) in several genes including Tabby (soluble TNF ligand –Ta), downless (TNF receptor – dl) and Crinkled (death domain adaptor – Cr) gene have resulted in abnormal tooth development displaying