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New Suspicions about GMO

Do transgenic plants have a negative effect on health? Ever since their commercialization in 1996, the question has agitated circles of experts and ecologists, without any indisputable proof allowing an affirmative response. Now, several recent studies effected by credible researchers and published in scientific reviews tally with one another to throw doubt on GMOs' complete harmlessness. They don't assert that GMOs generate health problems. But at the very least they suggest that GMOs provoke biological impacts that must be more widely studied. This new questioning arises just as the Council of Ministers adopted a proposed law on GMO Wednesday, February 8, and as the World Trade Organization (WTO) handed over an interim report February 7 to the parties in a conflict that opposes the United States, Canada, and Argentina to the European Union on the issue of transgenic plants.

In November 2005, Australian researchers published an article in a scientific review (Vanessa Prescott et al., Journal of Agriculture and Food Chemistry, 2005, p. 9023) explaining that the transfer of a gene that expresses an insecticide protein from a bean to a pea had provoked unexpected problems: among the mice fed the transgenic peas, Csiro (the Australian equivalent of the French National Center for Scientific Research, CNRS) researchers observed antibody production, markers of an allergic reaction. The affair, which made headlines in the Australian and English press, led Csiro to stop development of that transgenic pea, while West Australia Minister of Agriculture Kim Chance announced that his government would finance an independent study on feeding animals with GMO: "The state government is aware of the anxiety concerning GMO safety, while most of the research in this domain is conducted or financed by the very companies promoting GMO," Mr. Chance explained in a November 2005 communiqué.

During the summer of 2005, it was an Italian team led by Manuela Malatesta, cellular biologist at the Histological Institute of the University of Urbino, that published intriguing results (European Journal of Histochemistry, 2005, p. 237). In prior studies, that team had already

demonstrated that absorption of transgenic soy by mice induces modifications in the nuclei of their liver cells. This summer's publication proved that a return to non-transgenic food made the observed differences disappear. It also showed that several of these changes could be "induced in adult organisms in a very short time."

In Norway, Terje Traavik, scientific director of the University of Tromsö's Institute of Genetic Ecology, just published a study in European Food Research and Technology (January 2006, p. 185): he demonstrates that an element of the genetic structures used to modify a plant, the catalyst 35S CaMV, can provoke gene expression in cultured human cells. Now, according to GMO promoters, that catalyst normally only operates that way in plants.

The increase in these experiments led the FAO (the United Nations' Food and Agriculture Organization) to organize a seminar on the safety of transgenic food in October 2005, bringing together the best specialists on the question. "What came out of it was that we have to pay attention to this type of study," said FAO seminar coordinator Ezzedine Boutrif. "In several cases, GMOs have been put on the market when the safety issues were not very clear."

The researchers involved in these recent studies declare their neutrality. "I had no preconceived idea about GMOs when I began my research in 2000," says Manuela Malatesta. "I thought they weren't dangerous because we had been eating them for a long time. But there was virtually no scientific literature on the subject. Consequently, we thought it was useful to undertake some studies." For Terje Traavik, the initial motivation was different: "I was doing cancer research using transgenesis. My colleagues and I knew that it would pose a problem if it left the laboratory. That concern convinced us that we needed to study this type of risk."

This work attracts all the more attention in that, in the United States as well as in Europe, research on the impacts of GMO has not been encouraged by governments. Toxicological studies were effected by the companies promoting GMOs, the impartiality of which is debatable, and subsequently examined by commissions. But the latter never reproduced the experiments, which remain secret. Yet those studies sometimes also show notable biological impacts.

On April 23 2004, Le Monde revealed that experts from the Commission on Biomolecular Genetics (CGB) were divided over the effects of a Monsanto corn, MON 863. In the toxicological study that had been communicated to them, it seemed that rats fed with the GMO presented several anomalies: an increase in white blood cell count, blood sugar changes, reduction of

red blood cell count, etc. A debate followed between the agencies concerned that led to a favorable CGB opinion. Although the experts re-examined the file, they did not, however, take a new look at the statistical analysis presented by Monsanto.

Associations including Greenpeace demanded publication of the toxicological file so that they can submit it to a second opinion. On June 9, 2005, the Munster, Germany, Court of Appeal ordered its publication. Greenpeace then consigned two French researchers, Gilles-Eric Séralini, of the University of Caen, and Dominique Cellier, of the University of Rouen, to prepare a statistical second opinion of the case. They are supposed to publish the results of their study in February. "Monsanto's statistical analysis of the differences observed in the rats was very superficial," observes Dominique Cellier, who is a biocomputer specialist. "They isolate the variables instead of using so-called multi-variable analysis methods, which consist of looking at the observed anomalies in a coherent way. If one uses those methods, one observes coherence between the weight, urinary tract, and hematological anomalies in the animals fed GMOs."

This study should provoke new debates. But already, official experts recognize that the toxicological evaluation procedures for GMOs are not perfect. "The discussion about MON 863 was very positive," says Jean-Michel Wal, a member of the European Authority on Food Security's GMO group. "It has allowed us to deepen our evaluation methods. In fact, 90 day toxicological studies on rats are very difficult to execute and interpret. We don't know how to study a food overall, whether it's a GMO or not; there's no norm." And the increase in questions about the biological impacts of GMOs, at the very least, calls for more open scientific debate and public research, which, at the moment, is very rare.

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