Interim report and preliminary evaluation of the summary report on the "13 Week Dietary Subchronic Comparison Study with MON 863 Corn in Rats Preceded by a 1-Week Baseline Food Consumption Determination with PMI Certified Diet #5002 (Report MSL-18175/Covance Study No. 6103-293)".

By Arpad Pusztai, 12 September 2004

This preliminary report is based on the Monsanto summary report. However, as this 19-page report contains no description of the design of the feeding experiment, there will be occasional references to the full study.

A general comment: I find the design of the feeding study and presentation of its results confusing. It contains a lot of superfluous data but at the same time many important parameters are missing: (see below)

1. The precise composition of the diets is not given in either the short or the full study report. No proper high impact factor nutritional journal would ever accept a paper without such. It is not sufficient or acceptable to refer to a commercial diet (PMI Rodent #5002) or to just compute the composition, the protein, energy, etc. contents of the diets. These need to be confirmed by actual analyses on the diets, particularly as the full report mentions that there were difficulties of mixing the ingredients into a homogenous diet.

2. The length of the study it should have made it imperative to store the diets in a frozen state because some of the essential fats and vitamins could have been destroyed by storing them at room temperature.

3. In the USA it is quite possible that the33% commercial maize grain is already contaminated by GM corn, e.g. glyphosate-resistant corn such as NK 603.

4. Why is it that the 11% test diet is not supplemented with the parental line instead of commercial maize? (p. 2).

5. In the study (and in Table 1) it is only the first 4 diets that are relevant; the comparison should strictly be between the GM and its control diet. The use of historic values and the comparisons with the additional six reference groups only serves to widen the value range of the data and thus reduce the chances of finding significant differences. References to broiler feeding studies are irrelevant for this evaluation!

6. Instead of irrelevant reference groups one additional major control group should have been used. In addition to the parent line control the authors should have set up a control group in which the parental line diet was supplemented with the gene product isolated from MON 863 corn at the same concentration as it is expressed in this GM corn. This could have shown up any potential changes due to the splicing of the Bt gene construct into the corn genome. (p. 2) as other studies indicated this.

7. Body weight-, food consumption-data, etc. (p. 3) cannot be statistically or otherwise evaluated or interpreted without the full report and as such references to these in this summary report are meaningless!

8. References to statements such as *"A statistically significant finding may not automatically constitute definitive evidence of an adverse or toxicologically significant effect"* is unacceptable in this form. So who is going to define what is biologically significant? Apparently, it is the authors of the report! We have to remind the authors that if they accept the principle of substantial equivalence any non-equivalence must at least be subjected to further detailed studies. What is the point of performing sophisticated tests and measurements if after finding significant differences they are dismissed as not biologically significant? (See for example differences in kidney weights and many others!)

9. Re: the Monsanto supplemental analysis of "selected data" for consideration by the CGB. It is unacceptable for many experimental scientist to regard something as important as significant increases in white blood cell and lymphocyte counts and decreases in kidney weights in male rats or a decrease in reticulocyte counts in females as representing normal biological variability. This is particularly so after the established and published fact of lymphocyte infiltration in the rat gut after feeding them on GM potato diets or finding significant humoral and mucosal antibody responses in mice that were orally given Bt toxins The authors must be aware of the fact that increased lymphocyte counts are strong indicators of infection or even tumour development.

10. The last para on page 4 gives a graphic example why the authors use the additional six reference control groups: *"All of the high dose individual male lymphocyte values, i.e. 7.1-11.3 fall within the range of values measured for the reference control groups".* This comparison has no biological meaning; its only purpose is to try to make the significant differences between the test and the proper control groups less significant.

11. Incidentally Table on p. 5 does not contain the 5 weeks' data, some of which were previously (p. 4 in para Hematology and Clinical Chemistry Findings) indicated to be significantly different.

12. On p. 6, second para it is startingly stated: *"The 34% and 52% decrease in reticulocyte counts in the is attributable to normal biological variability".* Again the six reference control values come to the help of the authors. It is truly incredible!

13. And this goes on with the glucose values despite the fact that in females the differences are significant with the 11% diet and remain so at 33%.

14. Apart from the kidney weight data no other organ weights are given! It is incredible that no actual values are given for parts of the gastrointestinal tract even though that is where any food, including GM foods, will first impact on!

15. Postmortem examination is only given for "selected" tissues. Why?

16. *"In this study tissues from reference control animals were not processed for histopathological examination"* How could the authors then make comparisons with the test animals? Using "historical control" pathology data by Monsanto is irrelevant

17. In Table 5 (p. 9) the proper comparison must be between the test and parental control values. All other values are irrelevant! All test values, except the kidney tube mineralization, are higher than the corresponding parental controls! The explanations offered by Monsanto are either irrelevant or invalid!

18. On the basis of the reported study and its results the Monsanto scientists have no justification to conclude that *"the weight of evidence supports a conclusion that there are no MON 863-induced adverse effects observed in this 90-day rat feeding study."* Fortunately they qualify that **it is only their opinion!** (p. 10 last sentence).

Overall, this study, particularly as given in this short and almost meaninglessly abbreviated and highly selective format has no scientific value. However, even as it stands the study strongly indicates that feeding rats on diets containing significant amounts of MON 863 GM corn can potentially be detrimental to the health of these animals and may cause major lesions in important organs (kidneys, liver, etc), interfere with the function of their immune system (lymphocyte, WBC, granulocyte counts) and change their metabolism (glucose). Moreover, and even more importantly, the omissions in the design and execution of this study would make it impossible to consider the results to be acceptable for publication in any high-profile international nutritional journal. These deficiencies will be fully outlined and discussed in the Final Report.

Quelle: GMWatch
http://www.gmwatch.org/p1temp.asp?pid=66&page=1