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Thema ACS: Französische Untersuchung belegt Roundup®-Herbizidrückstände führen zum Tode von Humanzellen & sind schlecht bewertet (23 DEC 2008)

Auf vielfachen Wunsch veröffentlichen wir unseren gestrigen Kommentar zu der französischen Toxizitäts-Studie bei dem Herbizid Roundup® hier auch noch einmal auf Deutsch. Das Abstract sowie die Studie selber stehen nur auf Englisch zur Verfügung; die Langfassung kann heruntergeladen werden unter www.traceconsult.ch/71664/77643.html:

Comment by TraceConsult™: *Der Umstand, dass es die angesehene American Chemical Society war, die den folgenden Artikel über eine neue französische Studie der Universität Caen veröffentlicht hat, verleiht der Arbeit zusätzliche Glaubwürdigkeit. Im Wesentlichen zeigen die Resultate, dass Rückstände des bekannten Glyphosat-Herbizids Roundup®, die in allen GVO-Lebens- und Futtermitteln nachweisbar sind, bei menschlichen Zellen schädlich und sogar tödlich wirken können – selbst bei sehr niedrigen Mengen.*

Die Erkenntnisse der französischen Wissenschaftler sind besonders für all jene Quellen deutlich peinlich, die in der Vergangenheit immer behauptet haben, dass ausreichende wissenschaftliche Untersuchungen gezeigt haben, dass GVO-Sojabohnen sicher für den menschlichen Verzehr sind. Die Autoren sagen, dass ihre Forschungen „... auf die nicht wünschenswerten Auswirkungen hinweist, die gegenwärtig verdeckt bzw. vor wissenschaftlicher Überprüfung verborgen sind.“

Nach den negativen österreichischen Untersuchungen zu Mais im vergangenen November stellt dies ein weiteres Beispiel von Schäden dar, die mit GVO-Pflanzen verbunden sind, die gegenwärtig auf dem Markt angeboten werden. Im vorliegenden Fall ist der Schaden „indirekt“ – aber er ist nichtsdestoweniger unausweichlich, da alle Roundup Ready®-Pflanzen, die für Lebens- oder Futtermittel verwendet werden, auf oder über dem untersuchten Niveau Roundup®-Rückstände enthalten. Wir nehmen üblicherweise nicht an reinen Aktivisten-Diskussionen teil – und der heutige Bericht sollte nicht so ausgelegt werden, als würden wir von dieser Praxis abweichen. Der Anfangstatbestand, wie er vor uns ausgebreitet ist, weist jedoch bereits so stark in die Richtung von Vorsicht, die kommerzielle Einkäufer walten lassen sollten – nicht nur bei Soja-Rohwaren –, dass wir es als angemessen erachten, diesen Bericht unseren Lesern zur Kenntnis zu geben.

Der Volltext der veröffentlichten Arbeit auf Englisch lässt sich im PDF-Format herunterladen bei: <http://www.traceconsult.ch/71664/77643.html> (bitte bis fast zum Fuss der Seite herunterscrollen).

Volltext (nur für Abonnenten):

<http://pubs.acs.org/doi/full/10.1021/tx800218n>

Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells

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Abstract

We have evaluated the toxicity of four glyphosate (G)-based herbicides in Roundup (R) formulations, from 105 times dilutions, on three different human cell types. This dilution level is far below agricultural recommendations and corresponds to low levels of residues in food or feed. The formulations have been compared to G alone and with its main metabolite AMPA or with one known adjuvant of R formulations, POEA. HUVEC primary neonate umbilical cord vein cells have been tested with 293 embryonic kidney and JEG3 placental cell lines. All R formulations cause total cell death within 24 h, through an inhibition of the mitochondrial succinate dehydrogenase activity, and necrosis, by release of cytosolic adenylate kinase measuring membrane damage. They also induce apoptosis via activation of enzymatic caspases 3/7 activity. This is confirmed by characteristic DNA fragmentation, nuclear shrinkage (pyknosis), and nuclear fragmentation (karyorrhexis), which is demonstrated by DAPI in apoptotic round cells. G provokes only apoptosis, and HUVEC are 100 times more sensitive overall at this level. The deleterious effects are not proportional to G concentrations but rather depend on the nature of the adjuvants. AMPA and POEA separately and synergistically damage cell membranes like R but at different concentrations. Their mixtures are generally even more harmful with G. In conclusion, the R adjuvants like POEA change human cell permeability and amplify toxicity induced already by G, through apoptosis and necrosis. The real threshold of G toxicity must take into account the presence of adjuvants but also G metabolism and time-amplified effects or bioaccumulation. This should be discussed when analyzing the in vivo toxic actions of R. This work clearly confirms that the adjuvants in Roundup formulations are not inert. Moreover, the proprietary mixtures available on the market could cause cell damage and even death around residual levels to be expected, especially in food and feed derived from R formulation-treated crops.

Press release:

Press Release CRIIGEN - January 2009

DIFFERENT ROUNDUP FORMULATIONS LEAD TO EMBRYONIC, UMBILICAL CORD AND PLACENTAL CELL DEATH AND ARE POORLY ASSESSED

For the first time, the toxicity mechanisms of four different Roundup formulations were studied in human cells. They act at doses where they are not herbicides anymore. The cells were neonatal cells freshly isolated from the umbilical cord, or less sensitive cell lines specially used to measure pollutant toxicity. The various components of these major herbicides were tested because they are among the most common in the world. Their residues are among the major pollutants, and moreover they are authorized as residues contaminating GM foods and feed at the tested levels.

As a matter of fact, Roundup formulations are the most common herbicides used with cultivated GMOs. Roundup Ready soya, the main GMO imported in Europe for food and feed, contains Roundup residues. In this research, the formulations were diluted at minimal doses (up to 100,000 times or more) and they programmed cell death in a few hours in a cumulative manner. We also noted membrane and DNA damages, and found that the formulations inhibit cell respiration. In addition, it was shown that the mixture of the components used as Roundup adjuvants amplified the action of the active principle called glyphosate; one of its metabolites may be even more toxic. These effects are greatly underestimated by the legislation, which does not take these phenomena into account, but instead simply sets arbitrary contaminant thresholds in food or feed. The rules apply to glyphosate whatever its formulation may be, this is wrong.

The authorizations for using these Roundup herbicides must now clearly be revised, since their toxic effects depend on, and are multiplied by, other compounds used in the mixtures placed on the market; and glyphosate is only one of them. The detailed blood analyses of each mammal which has received this herbicide during regulatory tests before commercial release must be published immediately, since our research points to undesirable effects which are currently masked or hidden from scientific scrutiny.

This independent work was performed by Nora Benachour and Prof. Gilles-Eric Séralini in the University of Caen in France. It is published in the Scientific American journal *Chemical Research in Toxicology*. It was supported by CRIIGEN and the Regional Council of Basse Normandie [France]. The support of the Human Earth Foundation and Denis Guichard Foundation is also acknowledged. Contact in France: Pr Gilles-Eric Séralini, Biochemistry, Institute of Biology, University of Caen, Esplanade de la Paix, 14032 Caen, France. Tel: 33(0) 2-31-56-56-84. Fax: 33(0)2-31-56-53-20. Corinne Lepage President of CRIIGEN criigen@unicaen.fr
"Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic and Placental Cells" by Nora Benachour and Gilles-Eric Séralini. (<http://pubs.acs.org/doi/abs/10.1021/tx800218n>)

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