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# Co-formulants of glyphosate herbicides are endocrine disruptors

Press release 02 March 2016
European Network of Scientists for Social and Environmental Responsibility (ENSSER)
http://www.ensser.org/media/0216

In a new French-Hungarian study, the co-formulants of glyphosate herbicides are shown to be endocrine disruptors, i.e. to interfere with the human hormone system. Two ENSSER board members, Nicolas Defarge and András Székács, are involved in the study.

Despite a great deal of scientific criticism pointing at serious potential health hazards[1], the European Commission has recently proposed to extend the approval of the world's most popular herbicide glyphosate for another 15 years[2]. One of the points of criticism is that both the EU risk assessment and the acceptable daily intake (ADI) refer only to the active substance glyphosate, while the commercial product ('formulation') contains more substances: 'co-formulants' are added to modify the physico-chemical properties or to improve penetration or stability of the active substance. The co-formulants are usually presented as inert and their identity is generally protected as 'confidential business information'. However, the new study demonstrates that known co-formulants of six commercial glyphosate formulations have endocrine-disrupting effects by themselves.

The endocrine disrupting effects of the co-formulants were assessed by measuring the activity of aromatase, a key enzyme for the balance of sex hormones, in human placental cells, using a method validated by the OECD to assess endocrine disruptors. Aromatase is responsible for the irreversible conversion of male sex hormones into female sex hormones.

The aromatase activity was significantly decreased both by the co-formulants alone and by the formulations, from doses 800 times lower than the recommended agricultural dose, while glyphosate alone only showed such an effect at one-third of the recommended agricultural dose or higher.

These results could explain numerous in vivo findings with glyphosate formulations not seen with glyphosate alone. This research questions the definition of the ADI for pesticides, because the ADI is calculated based on toxicity testing of only the declared active ingredient. Yet glyphosate is never used alone, but only with its co-formulants. Therefore the authors recommend that the acceptable daily intake of pesticides is calculated from toxicity tests on the commercial formulations instead of the active substance alone.

[1] E.g. EFSA and Member States vs. IARC on Glyphosate: Has Science Won? and Long list of glyphosate concerns shows EC flouts precautionary principle

[2] Glyphosate health risks ignored as Commission proposes long reapproval for use in EU