"Not all studies are usable"

Biologist Dr. Johanna Kaltenhäuser assesses plant protection products studies at the BfR. An interview about how to sort the wheat from the chaff.

Mrs. Kaltenhäuser, you evaluate scientific studies for the approval of active substances in plant protection products. What are the standards you use for this?
Comprehensible and reliable studies are crucial. This means that we place great importance on a precise description of experiments. What material was used, which methods were employed? The results have to be transparent, the study has to be statistically valid and, at the same time, individual data should be available to enable a detailed evaluation.

Responsible authorities, such as the BfR, are often criticised for only including industry studies in their assessment and not independent, potentially burdensome studies.
This is not the case. In addition to the data we have received from applicants, we use all the information we can find. Here, the main focus is on a thorough search of the scientific literature.

Then how do you explain the allegation?
On the one hand, the media sometimes present a distorted picture; on the other hand, this allegation is probably based in part on the fact that we cannot always use all the published studies for a particular active substance in our evaluation.

Why is that?
Firstly, because we have very specific properties of a substance in mind for the health risk assessment. For example: is it acutely toxic, in other words, is it poisonous when inhaled, when it comes into contact with the skin or is ingested with food? Can it trigger allergic reactions or does it irritate the skin or eyes? And then there are the long-term effects: is the substance carcinogenic, does it affect genes or impair fertility? These are questions that are crucial in the assessment. In contrast, independent studies often focus on fundamental scientific questions, like how a substance affects certain proteins in a cell culture. Of course, it is scientifically interesting to explore these issues, but it is difficult or currently even impossible to use such studies for a health risk assessment. There is also the fact that some of these studies use methods that are new and not yet sufficiently scientifically established.

What about the quality of independent studies?
Sometimes there are problems here, such as missing or inadequate information about the substances that were actually tested or the methods used. Or an insufficient number of laboratory animals, which may result in the statistical validity of the study being too low. These kinds of deficiencies do not mean that we ignore the study, but we must take weaknesses and uncertainties into account when weighing the results.

One accusation is that industry studies are not objective and only serve their interests.
Internationally standardised methods are used to ensure that industry studies are also objective. In addition, GLP standards have been developed. "GLP" stands for "good laboratory practice". GLP is required by law, e.g. for the safety assessment of plant protection products and other substances subject to authorisation, such as medicinal products.

What does that mean specifically?
Laboratories that work according to GLP standards are monitored. There is an obligation to document experiments and experimental protocols must be

defined from the start. Changes must be documented precisely. The data in the study reports must be noted in detail and in the case of animal experiments, the results of each individual mouse or rat must be disclosed. This allows us to see whether studies are conclusive.

What does that mean?

We do not always come to the same conclusion as the authors of the study report. We recently had a case where a carcinogenicity study was submitted for an active substance, in other words, whether a substance can cause cancer. This was negated. We re-evaluated the data and concluded that, on the contrary, certain carcinogenic effects were present. This result was of course included in our assessment.

For some time now, there have been discussions about the fact that study results cannot be reproduced by other laboratories. Has this reproducibility crisis in safety assessments reached plant protection products?

Of course, we are experiencing this too. This can even lead to a study being excluded from the weight of evidence analysis, in which the limitations of a study are weighted, and exclusion from our assessment.

How often does the problem occur?

They are isolated cases, fortunately. There is one important point that I would like to mention: results that are not published. Unfortunately, negative results do not often get published. These are experiments in which an expected effect did not occur. These would be of great interest for getting a good overall picture of the effects caused by a substance. We are interested in a re-think of this.

How can the quality of independent studies be improved?

Good documentation standards are immensely important to us. And there are already criteria for "good scientific practice", or "GSP", which form an ideal basis for an assessment. The GSP includes working in a transparent and comprehensible way, e.g. documentation of results and storage of primary data. Many scientific journals now require these kinds of standards of the authors. It is also very useful if the raw data on which a publication is based can be accessed. ◘

More information:

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