

A precedent case: CRISPR mushrooms

Pattern of changes in genome do not correspond to natural variations

26 June 2017 / Today in Berlin, experts are to meet in a conference organised by the German Ministry of Agriculture to discuss new methods of genetic engineering. One example of an organism created by these methods are mushrooms that have a delayed natural process of browning after being cut, and also have prolonged shelf-life. According to information issued by Pennsylvania State University where the mushrooms were developed, no additional genes were inserted and 'only' several short sequences removed from their DNA. The US authorities have already exempted these mushrooms from regulation without carrying out a more detailed assessment. Consequently, they can be produced and marketed in the same way as conventional food. The mushrooms have not yet reached the markets; they could also become a precedent case for authorisation in the EU.

Industry in the EU is also attempting to change policies so that plants and animals produced by these methods need not undergo a specific risk assessment. The basic argument is that these changes could also occur spontaneously. However, the example of the CRISPR mushrooms shows that they are wrong: Using CRISPR-Cas technology resulted in parallel changes in the genome of the mushrooms to block the gene function that naturally causes browning. Such a specific pattern of parallel changes in the genome would not occur spontaneously. However, with CRISPR-Cas technology several parallel changes in the genes are typical and often unavoidable: the gene scissors cut at all the sites in the genome where the respective gene sequences are located. For example, specific genetic information is often located at several sites in the genome of crop plants.

The CRISPR mushrooms exemplify a further problem: Available publications show that with the application of gene scissors there are frequently unintended changes in the genome of plants and animals. Consequently, the overall composition of the mushrooms can also be changed. Nevertheless, no detailed data has ever been published in regard to the mushrooms. Consequently, where there is no regulation, very often there is also no access to reliable data and no possibility for independent experts to assess the risks.

Testbiotech is warning the EU not to repeat the failures of the US. There are already several dozen genetically engineered plants allowed for cultivation and consumption that were not assessed in specific regulatory risk assessments. This means that risks cannot be assessed by independent experts and some of the plants are already spreading uncontrolled into the environment.

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Further information: [Documents on CRISPR mushrooms as published by US authorities](#) [2]
[Overview of some genetically engineered crops exempted from US regulation](#) [3]

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