



## **Pesticide and Antibiotics residues in food for example Tomatoes**

**Certified Chemist Wieland Hopfe, Application Consultant**

**FRITSCH GMBH**

**Milling and Sizing**

Industriestraße 8 • 55743 Idar-Oberstein • Germany

Tel.: +49 6784 70 0 • Fax: +49 6784 70 11 • E-Mail: [info@fritsch.de](mailto:info@fritsch.de)

[www.fritsch.de](http://www.fritsch.de)

Pesticides in the broader sense are considered all crop protection products and all other pesticides. More understandable for the "general public" maybe become the terms with the following examples: to combat blight on grape vines a crop protection product is used, and to combat worms in apples, pears or also the cankers in cabbage, a pesticide is used. These substances are applied directly onto the plant and also pass through the soil along with the nutrients, inside the plant and therefore inside the fruits.

Residues of drugs or transformation products of those are often found in human excretions. Also leftovers of drugs are often thoughtlessly discarded into the wastewater by the public. The drawn from the wastewater sewage sludge is partially distributed as fertilizer onto fields. It is also common knowledge that antibiotics are added to animal feed. Reminders of these again are applied across fields as dung and liquid manure. Up until now it was not clear though, if these substances are absorbed by plants and passed along in the food chain.

In this context the research by the University of Paderborn is interesting:

[Innovations-report  
chemie.uni-paderborn.de](http://chemie.uni-paderborn.de/innovations-report)

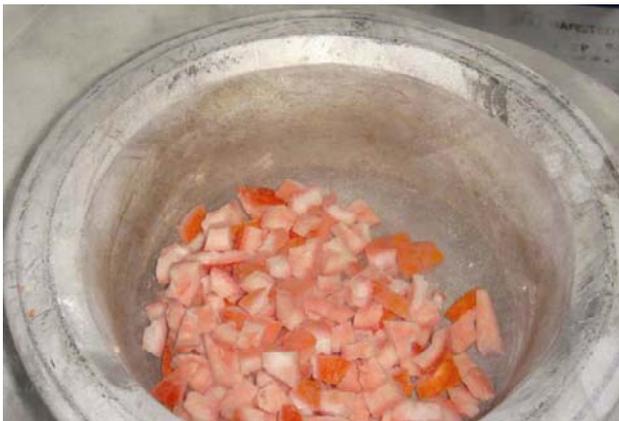
Each analysis requires the provision of a representative sample from the entire sample amount. Therefore, as a rule larger amounts of the product are usually available and it has to be ensured that through comminution and sample dividing, a representative sample is added to the analysis instrument.

Tomato plants are treated with various pesticides. Hereby the spray chemicals end up directly on the fruit, as well as directly inside the soil and therefore indirectly via the nutrient transport inside the fruit. Also the use of organic fertilizers from animal husbandry is widely spread. The consumer though desires unpolluted food. The production of food in the demanded quality is without the use of pesticides and fertilizers not possible though.

Consequently the necessity arises to inspect food in regards to possible residues. Often the sought after substances are temperature sensitive. This plays a major part during the preparation of the sample.



Preparing tomatoes cryogenically for analytical purposes is possible with the [Mortar Mill PULVERISETTE 2](#), if the tomatoes are chopped into small chunks and embrittled with liquid nitrogen. For this particular application FRITSCH offers as accessories for the mortar mill a stainless steel mortar bowl. This bowl can be cooled down with liquid nitrogen and even during the comminution additional liquid nitrogen may be added. Hereby a complete cryogenic comminution with liquid nitrogen is possible.



Here the tomato pieces are floating in the liquid nitrogen. Already after a few minutes a fine homogenous powder is obtained.



From the in this manner prepared sample, a small representative amount can be weighed in for analysis or for the further processing steps.