

## CURRENT RESULTS OF STYRIAN RESIDUE MONITORING

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**Keywords:** chemical residues, food quality monitoring, sampling plan**Background:**

Food quality monitoring is designed to protect the consumer from harmful food. The regular analysis for chemical residues in food of animal origin plays a vital role in this respect. Residues may be caused by environmental contaminants, pesticides, feed additives, drugs used in veterinary medicine, and technical additives and conservatives. Contrary to food-borne infection and intoxication caused by microorganisms, chemical residues in food of animal origin seldom lead to acute poisoning. Their hazard potential rather lies in their ability to cause chronic diseases, which can be triggered by minute amounts of these substances. Austrian law specifies guideline or maximum values for residues in food: the 'Decree concerning drug residues', BGBl. (Federal Law Gazette) No. 542/1988, the 'Decree concerning limits on residual pesticides', BGBl. No. 228/1997, and the Food Codex 1986, which specifies the permissible concentrations of heavy metals.

**Objectives:**

The compliance with the maximum and guideline values is officially controlled according to § 26 of the Meat Inspection Act, BGBl. No. 522/1982 as amended by BGBl. No. 66/1998. In the beginning, only the final products were controlled, which hardly provided any information about the origin of the residues. Therefore the controls were gradually developed into monitoring systems, which not only serve to identify the current situation but also allow conclusions to be drawn concerning the cause of the residues. Such monitoring systems provide a maximum amount of consumer protection, while at the same time reducing sampling, examination and staff costs. The samples are selected on a random basis and are representative. The sampling plan is prepared on the basis of the BAYES model (FUCHS et al., 1993), and takes into account prior information obtained within the scope of status quo analyses. These status quo analyses serve as a basis for the Styrian residue monitoring programme: in the past few years, analyses were performed for heavy metals in cattle kidneys (KÖFER and FUCHS, 1993), for pesticides in pork (KÖFER and FUCHS, 1994), for residual drugs, hormones and antihormones in meat (KÖFER and FUCHS, 1995) and Ochratoxin A in serum (DIEBER and KÖFER, 1999).

**Methods:**

The slaughtering statistics of the Province of Styria show that more than 90% of cattle and more than 95% of pigs are slaughtered in industrial establishments. From the methodological point of view it is therefore justified to restrict the population to those animals that are slaughtered in industrial slaughterhouses in order to facilitate data collection. The sampling plans prepared for each slaughterhouse selected specify sample type and size, animals to be sampled (type, age class, sex) and sampling dates (calendar week). Contrary to previous procedures the samples are selected on a targeted basis.

**Results:**

In 1997 1,199 samples from slaughtered animals and 114 from living animals were analysed for residues of hormones, antihormones and forbidden drugs. Neither in slaughtered nor in living animals could the use of hormones be detected (Table 1). The 19-nortestosterone residues found in two slaughtered cows were due to gestation. One fattened calf and two fattened pigs produced nitrofurant-positive results. 1,614 slaughtered animals were analysed for inhibitors, which were identified in one fattened pig and one

Table 1: Number of examinations of slaughtered animals according to § 26 FIUG in 1997

Animals	Hormones and antihormones	Inhibitors	Nitrofurans	CAP	Tranquillizers	Clenbuterol	Antiparasitics
Fattened calves	96	20 thereof 1 pos.	24 thereof 1 pos.	13		12	
Heifer	184	77	20	18	1	35	46
Cows	109 thereof 2 pos.	24	1	15	1		
Fattened pigs	370	1481 thereof 1 pos.	99 thereof 2 pos.	147	30		32
Fattened lambs	35	12	7	8			14
Sheep older than 2 years	5		1				2
Total	799 thereof 2 pos.	1614 thereof 2 pos.	152 thereof 3 pos.	201	32	47	94

fattened calf (Table 1). The lead and cadmium concentrations in the livers and kidneys of the examined animals were usually below, and in some cases at, the level of the guideline values specified in the Food Codex of 1986. Residual pesticides were detected only in individual cases, the guideline value specified for residual concentrations was reached in only one case. In addition to the implementing regulation for residue monitoring the Styrian pig population was analysed for the presence of chloramphenicol residues. The blood samples were taken at slaughterhouses using a sampling plan prepared by the Institute of Applied Statistics of Joanneum Research. None of the 355 serum samples examined displayed any residues of Chloramphenicol.

### Conclusions:

The maximum and guideline values are exceeded only in individual cases. This testifies to the proper handling and administration of drugs and low levels of heavy metals and pesticides in the environment.

### Pertinant literature:

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