

TRANSITION OF SOME HEAVY METAL ELEMENTS (Cd, Hg, Pb)
FROM PIGLET FEEDING ROOT SOIL ("Ferkelwühlerde") INTO
PORK LIVER AND PORK KIDNEY
2nd communication (test series II)

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SUMMARY

The concentrations of Cd, Hg and Pb in pork liver and kidneys have been compared in a test series O and a test series T (n = 20 each). The T-series consisted of 20 pigs which had been raised with a special solid waste compost product ("Ferkelwühlerde") and the O-series of 20 pigs were raised without such an additive. Both test series do not show any significant difference in the contents of Cd, Hg and Pb, so that we presume that the heavy metal concentration in such a root soil - produced with solid waste - does not have an important influence on the residual situation of liver and kidney of pigs fit to be slaughtered. In order to confirm this presumption, further investigations are planned.

1. Introduction

Solid waste compost is generally charged with high concentration of several heavy metals. The waste treatment station "Müra" in Biel is producing a special compost product for young pigs serving as a fodder additive, which is used in large quantities by the farmers. In 1986 it has been shown that the high content of heavy metals does not lead to higher quantities of heavy metals in pork liver and pork kidney¹⁾. Furthermore, it was shown that probably the application of that root soil can accelerate the growth of the pork. This fact induced a great interest in the breeding production. That's why we went on with our comparing test on the base of food hygiene consideration.

2. Elaboration of a second test series (1986/87)

To simplify the investigation, the previous parameters (Cu and Zn) were left aside. The liver and the kidney of two series of 20 pigs each have been examined. The pigs of the first series (T-series) had been fed ad libitum with the piglet feeding root soil, and the ones of the 2nd series (O-series) had not. The analytical methods were the same as described last year¹⁾.

3. Results

3.1. Table 1 - Liver

Animal Number	ug/kg		ug/kg		ug/kg	
	T	O	T	O	T	O
1						
2	15	23	6	8	114	100
3	32	25	8	4	132	152
4	26	20	6	4	200	136
5	36	20	7	7	131	181
6	21	30	5	4	99	110
7	21	22	4	L2	95	110
8	11	16	5	5	153	120
9	22	30	6	7	88	110
10	33	25	8	8	194	120
11	23	16	5	8	142	113
12	16	22	4	-	140	156
13	35	36	6	5	137	167
14	36	22	7	5	175	112
15	23	22	5	6	157	160
16	24	31	6	7	167	180
17	29	30	7	8	142	109
18	18	31	8	8	176	96
19	31	24	4	8	122	100
20	22	35	6	8	127	163
	31	28	7	8	180	110

Table 2 - Kidney

Animal Number	ug/kg		ug/kg		ug/kg	
	T	O	T	O	T	O
1	636	134	15	4	97	120
2	173	350	17	18	96	116
3	262	482	8	23	112	80
4	510	253	L2	12	82	141
5	189	400	10	8	117	92
6	134	523	9	8	126	85
7	679	569	16	8	82	126
8	82	603	18	12	203	123
9	149	138	11	19	105	110
10	97	120	4	14	153	196
11	126	605	17	12	143	157
12	133	153	17	8	133	150
13	184	120	4	16	95	103
14	121	126	9	14	112	126
15	104	203	4	5	200	93
16	92	105	10	6	111	195
17	121	184	6	13	123	110
18	104	126	8	18	144	109
19	145	209	9	8	163	100
20	93	512	8	4	176	90

4. Interpretation of results

As it has been shown in the preceding year¹⁾, no significant difference between the O and T series could be observed. These results seem to confirm our presumption, that the high contents of the mentioned heavy metals is hardly influencing the respective concentrations in pork liver and pork kidney. However, a new fact of the test series 1986/87 is that the concentrations of the said metals are generally higher than in 1985/86.

Table 3 - Amplitudes of concentration

Liver ug/kg	Cd	Hg	Pb
Series 85/86 (n=40)	35 - 45	4 - 8	88 - 200
Series 86/87 (n=40)	11 - 36	4 - 12	90 - 105
Kidney ug/kg			
Series 85/86 (n=40)	104 - 185	8 - 10	90 - 118
Series 86/87 (n=40)	82 - 679	7 - 23	82 - 203

Previous reports

- 1) Hauser E.: Transition of some heavy metal elements (Zn, Cd, Cu, Hg, Pb) from piglet feeding root soil into pork liver and kidney. 32nd Europ. meeting meat research w. 32/II, 401-402 (1986).