

PILOT STUDY ON THE PREVALENCE OF *SALMONELLA* IN SLAUGHTER PIGS IN GERMANY:

II. PREVALENCE OF *SALMONELLA* IN BATCHES OF SLAUGHTER PIGS, INFLUENCE OF TRANSPORT TIME AND WAITING PERIODS IN THE ABATTOIRS

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In a pilot study on the *Salmonella* prevalence in slaughter pigs of German origin, 12,000 pigs were investigated by standard cultural, immunological and molecular biological methods. A total of 752 batches of slaughter pigs from seven abattoirs distributed all over Germany were included in the study. The *Salmonella* prevalence was determined in the batches which often comprised pigs from individual finishing farms.

Based on the bacteriological examinations, batches of slaughter pigs were counted as positive or negative. A batch was regarded as positive if at least one pig of this batch was positive in the examination of fecal samples and/or lymphnodes. In general, batches only positive in the analysis of surface swabs taken from the carcasses were not considered as positive due to the possibility of smear contaminations from carcass to carcass. Batches were regarded as negative if no *Salmonella* were detected neither in fecal samples nor in lymphnodes.

648 out of 752 batches could be used for statistical analysis because in these the demanded conditions were realized (confidence interval under 60 percent by statistical safety of 90 percent). In nearly 70 percent of the batches no *Salmonella* were detected. *Salmonella* positive batches could be distributed into four classes according to their estimated prevalence:

- class 1: 0% > x ≥ 10%
- class 2: 10% > x ≥ 20%
- class 3: 20% > x > 50%
- class 4: 50% ≥ x ≥ 100%

High *Salmonella* prevalences with more than 50 percent positive animals were detected only in 13 batches (2.0 percent). Figure 1 shows the percentage of batches classified according to their estimated *Salmonella* prevalences.

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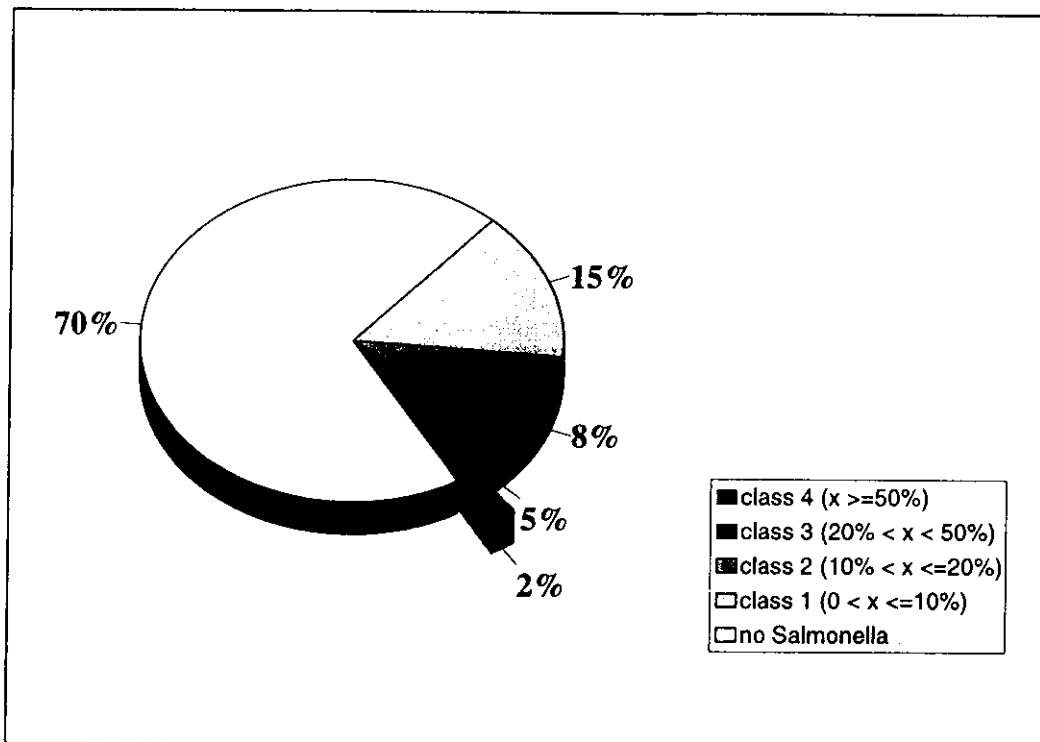


Fig. 1: Percentage of batches classified according to their estimated prevalence

A worst case scenario on *Salmonella* prevalences in the batches investigated was calculated. The confidence limits (90 percent statistical safety; p_u = upper limit; p_l = lower limit) of each *Salmonella* positive and negative batch were estimated by statistical methods (Cannon and Roe, 1982; Müller et al., 1979). First, the batches were distributed into four classes according to the upper confidence limits. Table 1 shows the results of the worst case scenario. A prevalence higher than 20 percent (90 percent statistical safety) could be excluded in more than half of the batches. A *Salmonella* prevalence of more than 50 percent could not be excluded in 5.2 percent of the batches investigated.

Table 1: Worst case scenario:
Number and percentage of batches classified according to upper confidence limits

	upper limit of 90% confidence interval (p_u)							
	$p_u \leq 10\%$	$10\% < p_u \leq 20\%$	$20\% < p_u < 50\%$	$p_u \geq 50\%$				
no <i>Salmonella</i> detected (n-)	115	161	176	-				
<i>Salmonella</i> positive (n+)	15	42	105	34				
total / percentage	130	20.1%	203	31.3%	281	43.4%	34	5.2%

Secondly, the batches were distributed into four classes according to their lower confidence limits. High *Salmonella* prevalences could be confirmed by statistical methods in 8 batches (1.2 percent). The lower confidence limits of these batches were higher than 40 percent at 90 percent statistical safety.

An influence of the duration of the transport of batches to the abattoirs or the waiting period in the abattoirs could not be detected. Figure 2 shows a trend of a lower *Salmonella* prevalence in batches with short transport times and higher *Salmonella* prevalence in batches with longer transport times. However, statistically significant differences could not be detected.

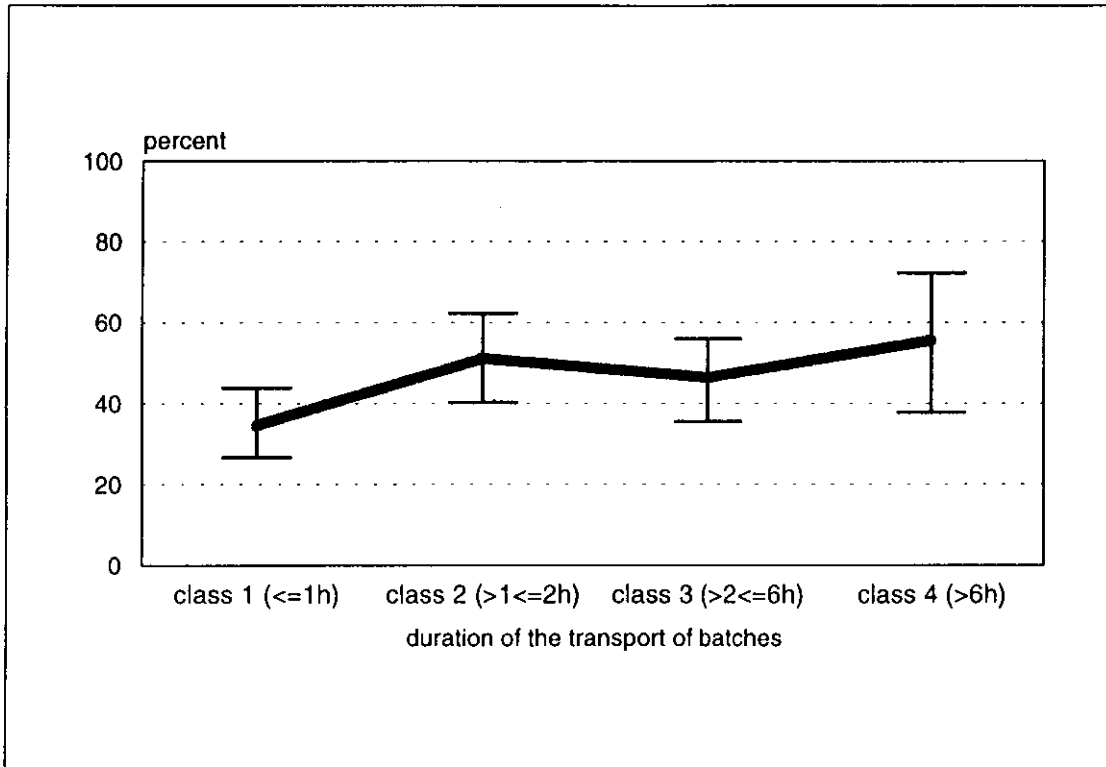


Fig. 2: Estimated prevalences and 95 percent confidence intervals of *Salmonella*-positive batches and duration of the transport of the animals

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