

6 SUMMARY

A study of the changes found in the pars nonglandularis (pars oesophagea) of the pig stomach in relation to selected housing parameters and daily liveweight gain, pathological lesions of liver and lungs at slaughter and meat quality as reflected in pH

Between 14.7-30.10.1994 the stomachs of 1.953 pigs from 45 farms were examined in an abattoir survey conducted on 65 days of slaughter. The examination of the stomachs was performed as part of a larger study to assess the contributing influence of various stressors on each other and on meat quality.

The data for the pathological changes of liver and lungs as well as for the meat quality parameters was obtained for each individual pig, and could be directly related to the findings at the pars nonglandularis. For housing and daily liveweight gain data was only available for groups of pigs, as they were delivered from each farm, and are therefore to be interpreted with greater caution.

It was possible to distinguish three groups from the results of the examination of the stomachs:

- A:** Pigs with a normal or slightly hyper- and parakeratotic pars nonglandularis (grade 0 and 1), a pale pink mucous lining of the stomach and a large amount of solid, porridge-like contents
- B:** Pigs with a severely hyper- and parakeratotic pars nonglandularis (grade 2), a dark red mucous lining of the stomach and a small amount of liquid contents
- C:** Pigs with a severely hyper- and parakeratotic pars nonglandularis with lesions and ulceration (grade 3 and 4), mostly a red to dark red mucous lining of the stomach and a medium amount of liquid or semiliquid contents

The influence of the stomach contents and therefore the feeding on the development of pathological changes in the pars nonglandularis are obvious from these results. As established in previous studies it is the feeding of a diet with a small particle size and a low fibre content which will lead to liquid stomach contents and ultimately ulceration.

This effect is not quite as obvious in group C, but considering the high mean daily live weight gain in this group it is acceptable to assume that a feed with a high energy and protein content and concurrent low fibre content has been fed.

Bearing in mind that careful interpretation is necessary for the data obtained from groups rather than from individuals, there is never the less a noticeable positive influence of straw used as bedding and a negative influence of completely slatted floors on the occurrence of pathological changes of the pars nonglandularis.

The mean daily live weight gain was lowest in the group of animals with a severely hyper- and parakeratotic pars nonglandularis (<650g) and highest in the animals with ulceration of the pars nonglandularis (>740g).

A correlation was established between the presence of *Ascaris suum*-scars on the liver and hyper- and parakeratotic changes of the pars nonglandularis as well as a correlation between pneumonia and ulceration of the pars nonglandularis.

The pigs were divided into three groups of lean meat contents to reflect their stress susceptibility (<55,5%, 55,5-59,4% and ≥59,5%). Animals with hyper- and parakeratosis of the pars nonglandularis were predominantly represented in the group of high stress susceptibility, animals with a healthy pars nonglandularis were predominantly represented in the group of low stress susceptibility.

The pathology of the pars nonglandularis had an effect on the pH measured in the musculus semimembranosus that was independent of the lean meat content. Animals with hyper- and parakeratosis of the pars nonglandularis were measured to have the lowest pH values and a higher incidence of PSE, whereas animals with ulceration of the pars nonglandularis had the highest pH values. The weight of the stomach contents did not influence the incidence of PSE in the present study.

Factors contributing to a healthy pars nonglandularis according to the present study include:

- the feeding of a diet high in fibre
- a large amount of stomach contents
- housing on partially-slatted floors (rather than completely slatted floors)
- straw as bedding
- good healthstatus

Factors contributing to hyper- and parakeratosis as well as ulceration of the pars nonglandularis according to the present study include:

- feeding of a finely ground diet with small particle size and low fibre content
- a small amount of stomach contents
- housing on slatted floors without straw
- other diseases
- a high stress susceptibility