

# Reduced occurrence of gastric ulcer in silage fed pigs

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## INTRODUCTION:

Interest is increasing to use silage as an alternative feed source for fattening pigs. Feeding silage could improve gut health, due to increased fibre content and/or particle size<sup>1</sup>. In order to avoid silage residuals and improve nutrient utilization, the silage preferably should be fed with finer particle size<sup>2,3</sup>.

To take advantage of the positive effects that silage can have on the gastric health, it is crucial to evaluate how the structure of the fed silage affect the gastric mucosa.

To evaluate the influence of silage on the mucosa in the *pars oesophagea* (PO) and the *pars glandularis* (PG) region of the stomach, two studies were performed. Pigs were fed silage with different pre-treatment, replacing 20% of crude protein intake (g/kg).

Our objectives in both studies were to evaluate how pre-treatment and feeding strategy of silage would affect ulceration in the gastric mucosa. Our hypothesis was that silage would reduce gastric ulcers.

## METHODS AND MATERIALS:

### Study 1

- 128 fattening pigs (30-110 kg)

### Dietary treatments:

- Control feed (Pellet-C)
- Commercial feed with dried, pelleted silage (Pellet-S)
- Commercial feed mixed with fresh silage into a total mixed ratio (TMR) in a 60:40 ratio
  - Chopped silage (~4-15 mm)(TMR-Ch)
  - Extruded silage (~1-3mm)(TMR-Pr)

### Gastric ulceration:

40 stomachs (10 per treatment) where collected at slaughter. Ulceration where visually assessed and scored by one veterinarian and one pathologist

### Study 2

- 126 fattening pigs (30-70 kg)

### Dietary treatments:

- Control feed (Pellet-C)
- Commercial feed with dried, pelleted silage (Pellet-S)
- Commercial feed mixed with fresh, chopped silage (~4cm) into a TMR in a 60:40 ratio (TMR-Ch)

### Gastric ulceration:

18 stomachs (6 per treatment) where collected after euthanization at approx. 70 kg. Ulceration where visually assessed and scored by one veterinarian and one pathologist

Table 1. Description of scoring criteria for gross lesions in the *pars oesophagea* and the *pars glandularis* region.

Score	Description
0	intact mucosa
1	mild hyperkeratosis (<50% surface area)
2	severe hyperkeratosis (>50% of surface area)
3	hyperkeratosis and a few small erosions (< 5 erosions & < 2.5 cm)
4	hyperkeratosis and extensive erosions (> 5 erosions and/or > 2.5 cm)
5	hyperkeratosis and very large erosions (>10 erosions or > 5 cm) and/or ulcers

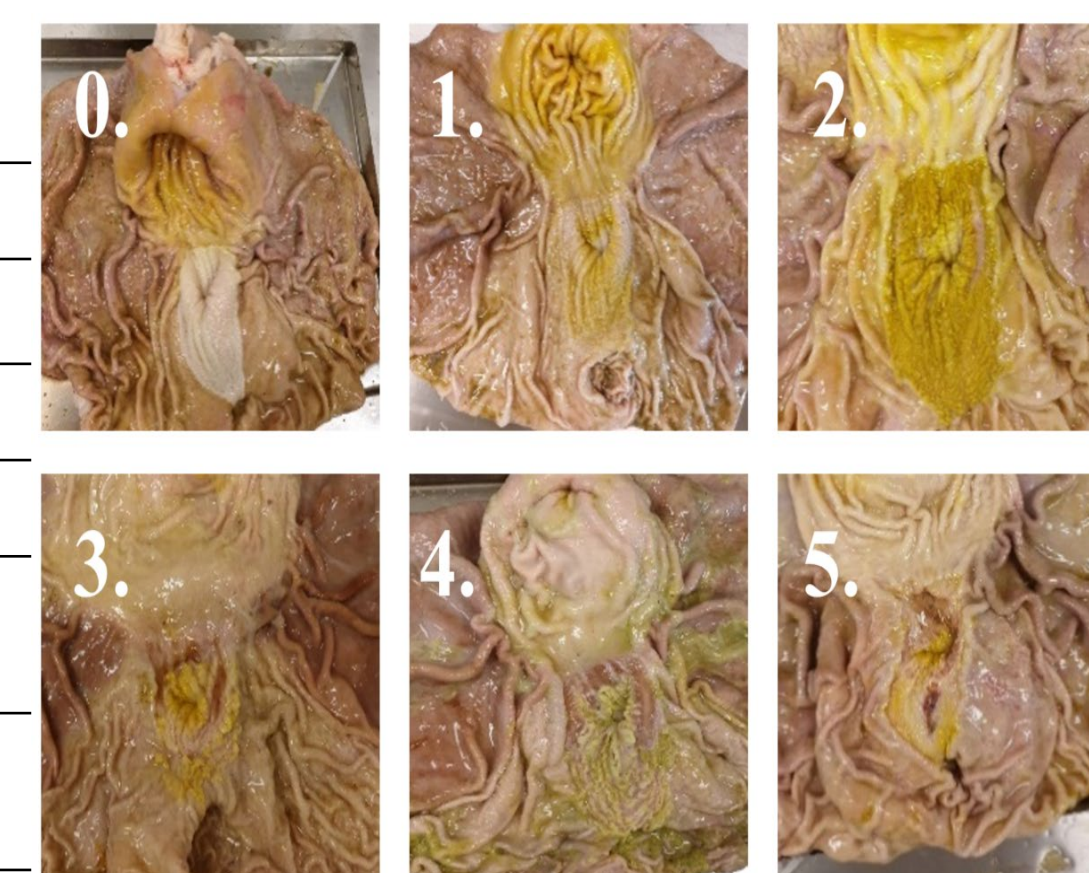


Figure 1. Gastric ulceration score used to assess lesions in the *pars oesophagea* and the *pars glandularis* region. Scoring according to Table 1.

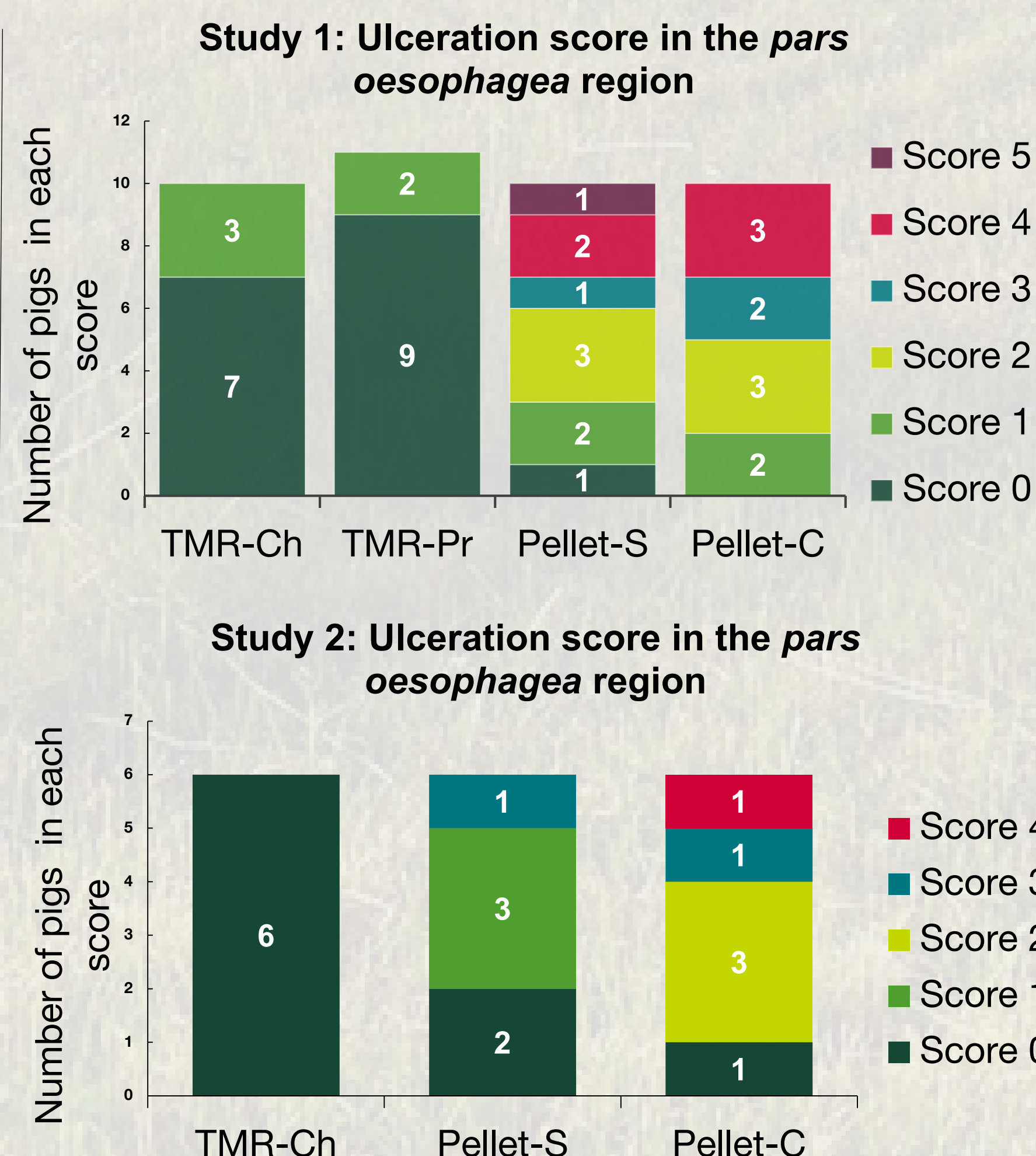
## RESULTS:

### Study 1

- Significant effect of diet on ulceration in the PO region ( $P=0.001$ ), no effect in the PG region.
- Lower occurrence of erosion among pigs fed fresh silage (TMR-Ch & TMR-Pr) compared to Pellet-S and Pellet-C ( $P=0.001$ ).
- Mucosal changes was found in 70% of the pigs in Pellet-S and 80% in Pellet-C.

### Study 2

- Significant effect of diet on ulceration in the PO region ( $P=0.01$ ), no effect in the PG region.
- Significant difference in ulcer score between TMR-Ch and Pellet-C ( $P=0.01$ ).
- Mucosal changes was found in 17% of the pigs in Pellet-S and 83% in Pellet-C.



## CONCLUSION:

In conclusion the results from both study 1 and 2 indicate that feeding fresh silage diets prevents gastric ulcers in the PO region and can positively affect the gastric health of the pigs. However, more knowledge is needed regarding factors that influence the development of ulceration in the PG region.