**Behavioural differences between weaner pigs with intact and docked tails**

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**Abstract**

Tail-biting in pigs (*Sus scrofa*) reduces welfare and production. Tail-docking reduces (but does not eliminate) tail-biting damage. The reason tail-docking reduces tail damage is unknown. It may reduce pigs’ attraction to tails (H1), or increase tails’ sensitivity to investigation (H2). To investigate these hypotheses, behavioural differences between 472 individually marked grower pigs with intact tails (nine groups of 25–34 pigs) or docked tails (nine groups of 22–24 pigs) were observed from 5–8 weeks of age on a commercial farm in Denmark. Pens had part-slatted floors, dry feeding and two handfuls of straw per day, and enrichment objects were provided. Behavioural sampling recorded actor and recipient for tail-directed (tail interest, tail in mouth, tail reaction) and investigatory behaviours (belly-nosing, ear-chewing, interaction with enrichment). Scan sampling recorded pig posture/activity and tail posture. Intact-tail pigs performed more overall investigatory behaviours but tail type did not affect the amount of tail-directed behaviours. Larger pigs performed more investigatory and tail-directed behaviours than smaller pigs and females performed slightly more tail investigation. Tail-directed behaviours were not consistent over time at the individual or group level. However, ear-chewing was consistent at the group level. One group with intact tails was affected by a tail-biting outbreak in the final week of the study (evidenced by tail-damage scores) and showed an increase over time in tail posture (tail down) and tail-directed behaviour but not activity. Overall, there were few behavioural differences between docked and undocked pigs: no evidence of reduced tail investigation (H1) or an increased reaction to tail investigation (H2) in docked pigs, and yet docked pigs had less tail damage. We propose that docking might be effective because longer tails are more easily damaged as pigs are able to bite them with their cheek teeth.

**Keywords:** abnormal behaviour, animal welfare, intact tail, pigs, tail-biting, tail-docking

**Introduction**

Tail-biting in pigs occurs when the oral manipulation of the tail by a conspecific results in physical damage to the tail (Schorroder-Petersen & Simonsen 2001; Taylor et al. 2010). Tail-biting is a multifactorial issue (Taylor et al. 2010; D’Eath et al. 2014), influenced primarily by limited access to substrates which allow for normal rooting, foraging and investigatory behaviour (Van de Weerd et al. 2006) and by limited feeder space (Hansen et al. 1982) but may also be affected by factors including genetics (Breuer et al. 2005), sex (Kritas & Morrison 2004), stocking density (Goossens et al. 2008), nutrition (Fraser 1987) and housing system (Hunter et al. 2001).

Tail-biting is a welfare and production issue: bitten pigs experience acute pain (Zonderland et al. 2009) and stress (Zupan et al. 2012), are less productive (Sinsalo et al. 2012) and have increased carcase condemnation at abattoirs, primarily due to pyaemia (Kritas & Morrison 2007). Tail-biting also suggests reduced welfare for the biting pigs, as the environment is deficient in some way, leading to redirected foraging behaviour (Sambraus 1985; FAWC 2009). Tail-docking, or the removal of a distal portion of the tail, is commonly used as a ‘preventative’ treatment of tail-biting. Even though it does reduce tail-biting damage, tail-docking is also a welfare issue. It is known to cause acute pain and stress (Marchant-Forde et al. 2009) and there is the potential for chronic pain due to neuroma formation in the tail stump (Simonsen et al. 1991; Done et al. 2003), although this has never been proven. Due to the negative animal welfare consequences of tail-docking, ‘routine’ use of tail-docking in pigs is banned in EU member states (EU Council Directive 2008/120/EC; Council of European Union 2008), but continues to be used in the majority of indoor systems.

Despite its widespread use, tail-docking is not 100% effective — it only reduces the amount of tail-biting damage and does not eliminate it (Hunter et al. 2001; Sutherland & Tucker 2011). The reason for this is unknown. It is possible that long tails are more attractive and cause pigs to tail bite more (Hypothesis 1 [H1]; Feddes & Fraser 1994). It is also possible that pigs with docked tails are more sensitive and move away more quickly when they are investigated or bitten by other pigs, not allowing as much damage to be done (Hypothesis 2 [H2]; Simonsen et al. 1991).