Anticipation of reward: indicator of welfare status and tool to improve welfare and health in husbandry pigs?

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Summary

There is ample evidence that stressful conditions in early life can have long-term consequences for behavioural and physiological responsivity, and thus compromise welfare and health. Conversely, rewarding events can have positive effects. Results of previous studies in rats indicate that behaviour displayed in anticipation of reward reflects the history of the animal, in particular with regards to the balance of stress and reward, and thus is an indicator of the welfare status. In addition, endogenous opiods in the brain have been implicated in reward anticipation, and may function as a pivotal part of the neurobiological substrate of welfare status. In particular, evidence indicates that release of endogenous opioids coincides with anticipation of reward.

It is hypothesised that, in pigs too, responses in anticipation of reward may be useful indicators of the welfare status of the animal, and that frequent exposure to reward may positively affect welfare and health. The aim of the project is to test these hypotheses in piglets.

Conditions routinely used in pig husbandry practice involve rearing of piglets in barren pens and socially unstable groups (as a consequence of mixing), and early weaning. Indeed, these conditions are stressful and known to exert long lasting effects on the pigs behavioural and physiological responsivity and health that are adverse when compared with rearing in enriched pens and socially stable groups. Piglets reared under these contrasting conditions will be used to establish differences in anticipation of reward (palatable food in a T-maze paradigm), validate these as differences in welfare status using classical stress parameters, and assess the involvement of endogenous opioids.

In addition, the effects of intervention with frequent anticipation of food reward during rearing on anticipatory responses in the T-maze and on the vulnerability weaning diarrhoea under experimental conditions, the effects on villus/crypt ratio and net absorption from the small intestine and on mesenteric flow rate will be used as vulnerability parameters. The results of this project will (a) contribute new insight into factors and mechanisms that determine welfare in pigs, (b) yield a new, non-invasive, positive indicator for welfare, and (c) open new strategies for the improvement of welfare and health of husbandry animals.