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## Prevention of the Problem Behaviors Including Tail-Biting in Pigs by Mineral Supply and Its Physiological Mechanism

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### Summary

Tail-biting is one of the great problem in the pig production. In this present study, we have examined the effects of presenting biting-materials or salt supply in the expression of tail-biting and the stress status in piglets.

Eleven litters of piglets (hybrid of Landrace x Duroc, 35 - 60 days age, 8 - 13 piglets per litter), were used. They were divided into controls (non-treated, three litters), environmental-enrichment (EE) treated (four) and salt supplied (NaCl) treated (four). Experiments were performed from 35 - 45 to 60 days age, and at 45 - 50 days age, chains or ropes to bite were presented to EE treated piglets, and 1.8 % sodium chloride solution was presented to NaCl treated piglets. Every 3 - 4 days, the conditions of the tails were recorded and the levels of damages were scored from 0 (no damage) to 6 (more than 1/3 of the tail was bitten off). Saliva sample was collected every one week, and cortisol (Cor) level was assayed by radioimmunoassay.

The damage-score in controls were increased day by day in all of three litters, and two litters of them were statistically significant ( $P < 0.1$ ). The observed frequency of tail-biting during 10:00 - 16:00 was not changed by the age. Saliva level of cortisol was not changed by the age. In EE treated piglets, the damage-score did not show the remarkable changes by presentation of chains in two litters whereas it increased in other two litters ( $P < 0.1$ ). The frequency of tail-biting during was reduced significantly by the treatment ( $P < 0.05$ ) in two litters whereas it was not changed in other two. Saliva cortisol level was significantly reduced by treatment ( $P < 0.01$ ) in one litter, and tended to be reduced in another one. Although EE treatment could not reduce the damage of tail in piglets as expected, it reduced the stress in some degree. In NaCl treated piglets, the damage score was decreased significantly in two litters ( $P < 0.1$ ), tended to be reduced in one, and was not changed in another one. The frequency of tail-biting was not changed by the treatment, but the piglets that bitten tails frequently were not observed after the treatment. Saliva level of cortisol was significantly reduced in two litters ( $P < 0.01$ ). NaCl treatment reduced the damage of tail in piglets and it reduced the stress also.