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Dr F. Josef van der Staay graduated in Psychology at Radboud University (RU), Nijmegen, and accepted a university teaching and research position in Experimental Psychology at Pontificia Universidad Catolica del Peru, Lima.

After returning to the Netherlands he started to work on different projects at RU on the effects of dietary choline enrichment on cholinergic neurotransmission and memory performance. Dr van der Staay earned his PhD in Comparative and Physiological Psychology at the RU Nijmegen before he moved to Troponwerke in Cologne and the institute of CNS Research of Bayer AG, Wuppertal, thereafter. For the past two and a half years he has been a senior scientist at the Animal Health Group of Wageningen University and Research Center, Lelystad, Netherlands.

# Effects of Catosal® on the physiological and behavioral response to social stress in piglets

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## Introduction

The usual practice of mixing piglets from different litters post-weaning induces psychosocial stress. We investigated the effects of subcutaneous injection with Catosal® on the stress response of unfamiliar piglets after mixing. Previously, we found that one subcutaneous injection with Catosal® at a dose volume of 0.2 ml\*kg<sup>-1</sup> body mass, corresponding to 20 mg butafosfan per kg body mass, just before mixing reduced the stress-induced increase of cortisol (1). The aim of the present study was to replicate this finding and to assess the behavioral consequences of the stress reduction.

## Material and methods

A total of 48 approximately 6-week-old female piglets from 12 litters (4 piglets per litter) were used. Pairs of piglets (mean body mass ± SEM: 9.43 ± 0.17 kg), each consisting of animals from two different litters, were injected subcutaneously with Catosal®, corresponding to 20 mg butafosfan per kg body mass or with a control product containing all ingredients of Catosal® except butafosfan, immediately prior to mixing. Saliva samples were taken before, and 30, 60, 90 and 120 minutes after mixing for determining cortisol as an index of the mixing-induced stress response. From the cortisol data, the area under the curve (AUC) was calculated using standard procedures (2).

The frequency and duration of agonistic behavior (biting, head knocking, pushing, and/or threatening) was registered on video tape during the 120-minute period post-mixing.

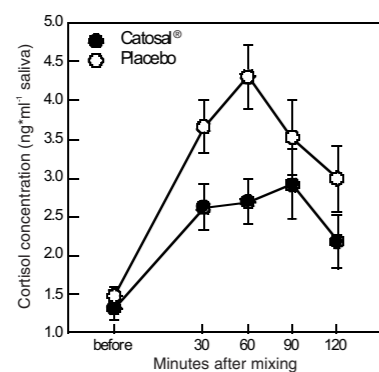


Figure 1. Effect of Catosal® treatment on salivary cortisol levels. The means and SEMs of the groups treated with Catosal® or placebo are depicted.

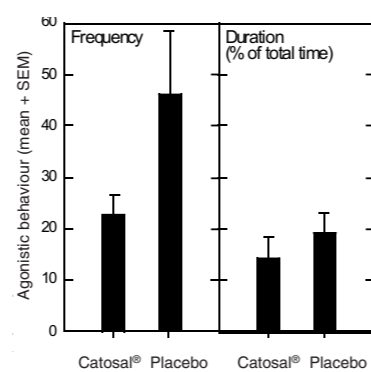


Figure 2. Frequency of agonistic behavior (N per 120 minutes; left panel) and duration of agonistic behavior (% of total time, i.e. 120 minutes; right panel). The means and SEMs of the groups treated with Catosal® or placebo are depicted.



## Results

Subcutaneous injection with Catosal® significantly reduced the salivary cortisol response to mixing (see Figure 1). The AUC was reduced by 29.2% in Catosal®-treated pigs in comparison with the AUC of pigs treated with the control product (p = 0.011). The Catosal®-treated piglets displayed less agonistic behavior than the controls (Figure 2). No adverse effects related to Catosal® were observed.

## Discussion

These results confirm the previously observed anti-stress effects of butafosfan in pigs from our laboratory. The observed effects indicate that our findings may be of clinical relevance in the treatment or prevention of stress-related disorders in pigs.

## References

1. De Groot, J. *et al.* (2003). *J. Vet. Pharmacol. Ther.*, 26 (Suppl 1), 222–223.
2. Veissier, I. *et al.* (1999). *J. Animal Sci.* 77, 2047–2053.