

## **PORCINE PHEROMONES: A NOVEL METHOD TO IMPROVE THE WELL-BEING OF FATTENING PIGS DURING TRANSPORTATION TO THE SLAUGHTERHOUSE?**

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### **Abstract**

During transportation fattening pigs are highly sensitive for stress, which has impact on animal welfare as well as on the slaughter livestock market. Investigations to improve the stressors linked to the transportation are to modulate the pig's behaviour without pharmaceuticals. Alternatives were developed like SUILENCE<sup>®</sup> (CEVA Santé Animale), a 'Porcine Appeasing Pheromone' (PAP) which has a calming and stress reducing effect on juvenile and adult pigs. In this placebo-controlled double-blind study this effects of SUILENCE<sup>®</sup> (synthetic PAP) on pigs were verified with 264 pigs before, during and after transportation to the slaughterhouse. Before transportation pigs received SUILENCE<sup>®</sup> or a placebo as a spray on the skin of the neck. Saliva samples for determination of the cortisol concentration as a parameter of stress were taken as a basal value at the farm, after transportation in the lorry and 30 min after arrival at the slaughterhouse at the lairage. The mean cortisol concentration of the second measurement (= after transportation in the lorry) of the SUILENCE<sup>®</sup>-treated group has a highly significant lower rise of the cortisol concentration ( $p \leq 0.01$ ) in compare to the animals of the Placebo-group. Also the cortisol concentrations of the Placebo-group at the third measurement (= 30 min after arrival at the lairage) are still higher ( $p \leq 0.05$ ) than those of the SUILENCE<sup>®</sup>-group. The course of the cortisol concentrations of the SUILENCE<sup>®</sup>-treated pigs seems to indicate that those animals are less stressed than the Placebo-treated animals. This first results indicate a positive influence of the 'Porcine Appeasing Pheromone' SUILENCE<sup>®</sup> on the physical and physiological status of fattening pigs during transportation to the slaughterhouse and is a method which is easy to handle to enhance the welfare and well-being of pigs during transportation.

### **INTRODUCTION**

Fattening pigs, in particular modern races are highly sensitive for stress. In spite of different counteractive measures, losses during transportation are still between 0.1 to 0.5%, and at the slaughtered pigs a PSE-rate of 10 – 20% is assessable. The emotional, physical, climatic and physiological stressors linked to the transportation, in detail aggressive behaviour, fighting and injuries, increase of the body temperature, heart rate, energy consumption and glycogenolysis, and also weight losses have a highly ethical and financial impact on the slaughter livestock market and the consumer behaviour in Germany. Due to the German pharmaceutical law the medical calming

of pigs for transportation with Neuroleptics,  $\beta$ -blocker ( $\beta$ -Adrenolytics) or others is generally forbidden because of long waiting times before slaughtering and possible side effects. So to modulate the pigs behaviour without pharmaceuticals, alternatives were developed like the 'Porcine Appeasing Pheromone' (PAP) called SUILENCE<sup>®</sup> (CEVA Santé Animale). Naturally PAP will be secreted by the mother sow and has a calming and stress reducing effect on juvenile and adult pigs. In this placebo-controlled double-blind study this effects of SUILENCE<sup>®</sup> (synthetic PAP) on pigs were verified before, during and after transportation to the slaughterhouse.

## **MATERIAL AND METHODS**

Investigations were carried out on 11 groups, each with 24 pigs (n = 264 pigs) with a body-weight of 105 -110 kg. Each group was transported in a common livestock lorry from the farm to the slaughterhouse on always the same route for about 40-45 minutes. Before transportation 5 groups (n = 120 pigs) received SUILENCE<sup>®</sup> (6 ml as a spray on the skin of the neck), 6 groups (n = 144 pigs) received at the same point a placebo. The following parameters were collected: A. living animals: analysis of cortisol in saliva at 8 animals /group (1. basal value at the farm, 2. after transportation in the lorry, 3. 30 min after arrival at the slaughterhouse at the lairage); video observation of the behaviour at the lairage for 25 min with focal sampling every 30 sec; measurement of the heart rate with a Polar<sup>®</sup> Sport Tester at 8 animals /group; measurement of the body-temperature with infra-red thermometry and body-weight; B. parameters post mortem: pH<sub>1</sub> and pH<sub>24</sub> ; conductivity in cutlet and ham 24 h after slaughtering; carcass inspection for injuries; C. environmental parameters: humidity and temperature.

## **RESULTS**

The results demonstrate a clear stressor or transport-induced activation of the HPA axis at all animals. All animals have a rise of the salivary cortisol concentration after transportation compare to the basal value, but the mean cortisol concentration of the second measurement (= after transportation in the lorry) of the SUILENCE<sup>®</sup>-treated group (n = 120 pigs) have a highly significant lower rise of the cortisol concentration ( $p \leq 0.01$ ) in compare to the animals of the Placebo-group. Also the cortisol concentrations of the Placebo-group at the third measurement (= 30 min after arrival at the lairage) are still higher ( $p \leq 0.05$ ) than those of the SUILENCE<sup>®</sup>-group. Additionally the body-temperatures of the PAP-treated animals are significantly lower ( $p \geq 0.05$ ) at arrival at the slaughterhouse and also the pH<sub>1</sub> (= meat-pH 45 min after slaughtering) has a slower descent in compare to the Placebo-animals. At that point of the investigations no correlations between heart rate and treatment, body-weight and treatment and injuries and treatment could be observed.

## **DISCUSSION**

With the application of the synthetic 'Porcine Appeasing Pheromone' SUILENCE<sup>®</sup> it is possible, to reduce the production and release of cortisol as a parameter of stress. The course of the cortisol concentrations of the SUILENCE<sup>®</sup>-treated pigs seems to indicate that those animals are less stressed than the Placebo-treated animals. The lower body-temperature of the SUILENCE<sup>®</sup>-animals indicate also a better physically condition of the SUILENCE<sup>®</sup>-animals after transportation and has also a positive effect on the meat quality, which is, according to the pH<sub>1</sub>, better than those

of the Placebo-animals. This first results indicate a positive influence of the 'Porcine Appeasing Pheromone' SUILENCE® on the physical and physiological status of fattening pigs during transportation to the slaughterhouse and is a method which is easy to handle to enhance the welfare and well-being of pigs during transportation and at the lairage as well as the meat quality. In further investigations it has to be proved if synthetic pheromones could also reduce aggressive behaviour and stress of piglets and gilts during regrouping.