

Dietary preferences of piglets for mixtures of formic and lactic acids or their salts combined with or without phosphoric acid

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INTRODUCTION

Preference or aversion of pigs for a particular feed may be linked to the palatability of its ingredients. Double choice protocols have been used as a tool to obtain information on the palatability of feed ingredients for weaning pig diets.

OBJECTIVES

The objectives of this experiment were:

- (1) to estimate the palatability of diets containing a mixture of lactic and formic acids (LFa) or of their corresponding Ca-salts (LFs).
- (2) to study the effect of partially replacing these mixtures with phosphoric acid (PA).

MATERIAL AND METHODS

Experimental design

- 180 post-weaned pigs (20-25 kg BW) in 45 pens.
- Each pen was offered simultaneous access to 2 feeding hoppers: one with a reference diet (REF; 18.2% CP; 14.1 MJ ME; 1.25% Lys), and one with the same diet with the product being tested.
- Five double choice tests:
 1. REF vs. REF (Control)
 2. REF vs. LFa
 3. REF vs. LFs
 4. REF vs. LFa + PA
 5. REF vs. LFs + PA
- 9 pens (replicates) per test with 4 pigs per pen.
- Each product was tested at three inclusion doses (0.5, 1 and 1.5%) in three consecutive periods (4 days/period).
- Preference (%) for each product and inclusion dose was calculated as the percentage contribution of the corresponding diet to total feed intake.



Statistical analysis

- Mean preference values were compared to the neutral value of 50% using the Student's t-test. The statistical package SAS® was used for all the analyses.
- Data were also analysed, by dose, as a 2 x 2 factorial design with nature of mixture (LFa or LFs) and PA inclusion (with or without) as main factors, using the GLM procedure. Least Squares Means differences were analysed by Tukey HSD.

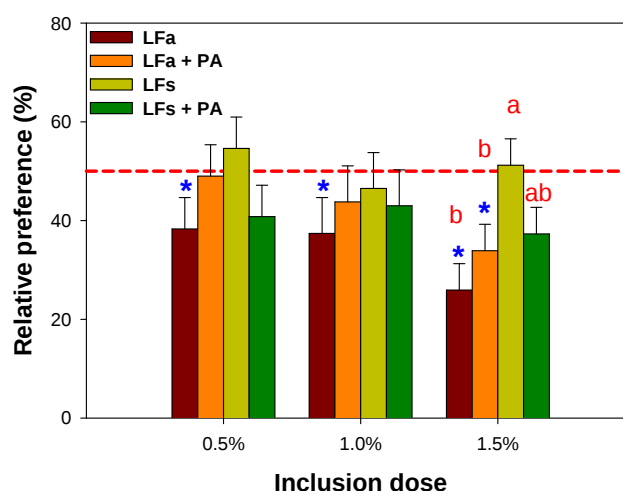
CONCLUSIONS

1. The addition of a mixture of lactic and formic acids to piglet feed reduces its palatability.
2. On the other hand, the addition of their corresponding Ca-salts does not affect feed preference.
3. The negative effect of the lactic and formic acids on feed palatability, can be reduced by partially replacing the mixture with phosphoric acid.

RESULTS AND DISCUSSION

- The preferences for the Control (REF) diet relative to its own did not differ from 50%, indicating that factors other than dietary composition did not affect the preference measurements.
- The preferences for the diets containing LFa were significantly lower than 50%, indicating a reduced feed preference by the pigs.
- Preference for LFs was significantly higher ($P < 0.05$) than that for LFa (45.6 vs. 38.1%).
- Overall the partial replacement of the organic mixture with PA did not affect feed preference (42.3 vs. 41.3%).
- A significant interaction ($P < 0.05$) was observed between the nature of the mixture (LFa or LFs) and its partial replacement or not by PA. PA appeared to improve preference when replacing LFa, but it decreased it when replacing LFs.

Preference for mixtures of formic and lactic acids (LFa) or of their Ca-salts (LFs) with or without phosphoric acid (PA)



Columns represent Least Squares Means and error bars SEM. Means with different letters are significantly different ($P < 0.05$). The asterisks indicate that the means are significantly different ($P < 0.05$) from the neutral value of 50%.