

## Medicated vs. alternative post-weaning feeding strategies.

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### Abstract:

Certain essential oils improve performances and health parameters in weanling piglets, thereby limiting the need for medications. A trial has been run on 114 piglets from weaning (21 days old) until 48 days post-weaning (69 days old) with two successive feeds and a transition on day 21. Four feeding strategies were compared: **Control (C)** without medication, **Antibiotics (Ab)** incorporating 500 ppm of amoxicillin and 3,200,000 UI/kg of colistin during phase 1, **Zinc oxide (ZnO)** providing 2,500 ppm of Zn in phase 1 or 1,000 ppm of **micro-encapsulated essential oils (EO)** during phases 1 and 2. At weaning, d7, d21, d35 and d48, piglets were weighted individually to collect their body weight (BW) and average daily gain (ADG). On the same date feed intake (ADFI) and FCR were calculated per pen. Feces samples were collected individually on 12 piglets per diet group, one day prior to weaning and at day 21 and 48. One gene from the 16S RNA was sequenced from the fecal DNA and used to describe the bacterial species assigned. The morbidity was numerically ( $P=0.18$ ) the lowest in the Ab group (11%), followed by the EO (17%), C (23%) and ZnO group (26%). During phase 1, the Ab group performed better on all criterias. During phase 2, EO had the best ADG, followed by C and Ab and, then, ZnO. The final BW were: 31.3 kg for ZnO, 32.4 kg for C, 33.6 kg for EO and 34.9 kg for Ab ( $P<0.01$ ). ZnO and Ab groups had a different kinetic of evolution of the bacterial diversity than C and EO. To conclude, this trial showed that medicated strategies alter the maturation of the microbiota after weaning. This alteration generated a second sensitive period after weaning, with diarrhoeas and looseness when transitioning from a medicated phase 1 feed to a medication-free phase 2 feed. Consequences were different with piglets fed the Ab feeds showing improved performances whereas piglets fed the ZnO had to face a difficult transition and showed decreased performances and more heterogeneity. EO moderately modified the microbiota and improved performances and health parameters. Practically, associating a formulation strategy favorable to health with additives moderately altering the microbiota maturation appears to be a non-controversial and efficient way to wean piglets without pharmacological zinc oxyde nor antibiotics.