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# Efficacy and Safety of Spectinomycin-Lincomycin and A Multivitamin for the Propylactic and Methaphylactic Use In Weanned Piglets

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**ABSTRACT:** Efficacy and safety of spectinomycin-lincomycin added to the starter feed formula for piglets at weaning plus a multivitamin in the drinking wáter for three weeks after weaned piglets was studied. Four groups were used. Groups 1, 2 and 3 development and growth was as expected. Group 2 shows a slight increase in weight, which although not significant, allows postulating that the combination of Spectinomycin-Lyncomycin and polyvitamins can be considered as EFFECTIVE AND SAFE combination to be used in weaned piglets. The control group development was slightly lower, although not significant, the weight of the control group can be considered as a cause of an environmental factor of the intensive exploitation in which the study was developed. Since they were exposed to the presence of endemic infections, a situation that Lincomycin - Spectinomycin have a recognized efficacy to prevent enteropathies. It was concluded that the profilactic and methahylactic use of spectinomycin-Lincomycin in feed plus a polivitamin formulation in drinking wáter is highly recomended.

## I. INTRODUCTION

The treatment and prevention of infectious respiratory and gastrointestinal diseases in swine FARMS worldwide is of veterinary importance.

The correct use of antimicrobials and other therapeutic drugs is of great concern as specified by the World Health Organization,

Respiratory and gastroenteric diseases are an important cause of morbidity and mortality in intensive swine FARMS, reducing animal welfare and a significant economic loss.

The presence of endemic infections reduces pig productivity, growth efficiency and increases production costs.

Disease-producing agents include Mycoplasma hyopneumoniae, Pasteurella multocida, Actinobacillus pleuropneumoniae, swine influenza virus and porcine reproductive and respiratory syndrome virus (PRRSV).

Antibiotics, vitamins and minerals are used to treat or prevent respiratory and gastrointestinal diseases.

There are many studies that evaluate the efficacy and safety of antibiotics and vitamins as disease preventers in the swine production process, however not all of them are decisive, and many are contradictory.

This study evaluates the efficacy and safety of Spectinomycin-Lincomycin, (3.5 mg lincomycin + spectinomycin/kg.) (1kg/Ton of formula feed) with a vitamin formula dissolved in the drinking water (Vit A, D3, E, K, Thiamine, Riboflavin, Niacin, Pyridoxine, B12, Calcium Pantothenate, Folic acid) (1 to 2 g for every 10 liters of water. Prepare and change the medicated water every 24 hours), with the objective of improving the productivity of the swine species; from weaning to finishing, a fundamental action to optimize both swine production and the correct use of these medicines added in feed premixes.

The aspects mentioned in PICO will be taken into account:

Medicated swine population and route of drug administration.

Intervention of selected antibiotics and vitamin supplements.

Compare the effect of the administered drugs with a placebo or control group.

Oie: Use WHO-approved antibiotics and vitamin supplements

Objective of this study: To evaluate the EFFECTIVENESS and SAFETY of Spectinomycin-Lincomycin and a vitamin supplement in groups of piglets at weaning for a period of three weeks, administered in feed premix.

## II. HYPOTHESIS

The administration of Spectinomycin-Lincomycin and a polyvitamin in the feed formula of piglets at weaning is a safe and effective procedure to supplement the welfare of the animals used in this study.

MATERIAL AND METHODS

In a swine farm with endemic respiratory and gastrointestinal infections, 4 groups of 10 piglets at weaning were randomly formed and received the following treatments mixed in their starter feed. The antibiotic in feed formula (PECOCILIN SP PREMIX), and the in wáter vitamins PECVITAM B were provided by Pecuarius Laboratories, México.

## III. TREATMENTS

Group 1. In the starter feed mix Lincomycin Spectinomycin , (3.5 mg lincomycin + spectinomycin/kg.) (1kg/Ton of formula feed) and water ad libitum.

Group 2. Spectinomician Lincomycin was administered in the starter feed and the polyvitamin 1 to 2 g per 10 liters of water. Preparing and changing the medicated water every 24 hours), in ad libitum water.

Group 3. With the starter feed the polyvitamin in doses of 1 to 2 g per 10 liters of water. Preparing and changing the medicated water every 24 hours), in ad libitum water.

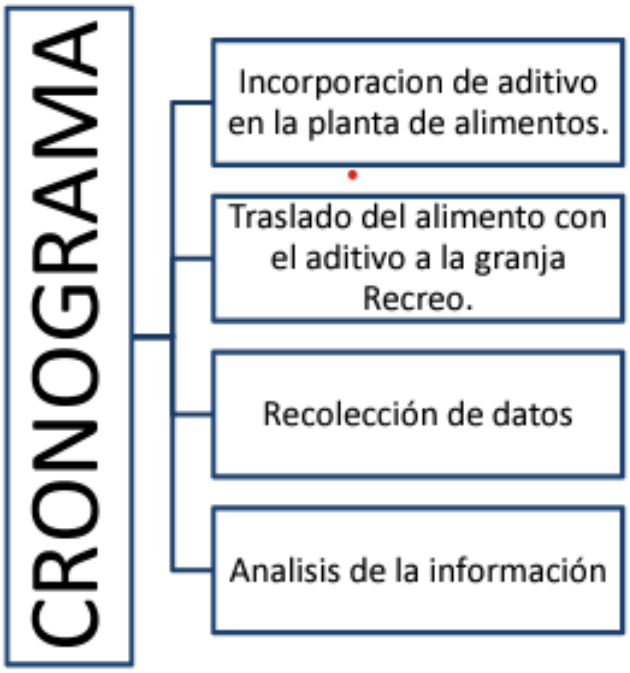
Group 4. Will act as control group, receiving starter feed and water ad libitum.

EFFECTIVENESS will be studied based on the action of the products studied on weight gain, morbidity and mortality in a farm with endemic respiratory and gastrointestinal infections.

SAFETY will be studied by weighing the cattle from the beginning to the end of the study, blood samples will be taken at random from the different lots to observe possibilities of change due to subclinical or environmental disease effects.

## IV. Development

To observe the weight gain of piglets at weaning, improvement and homogeneity of the medicated groups.
Study the efficacy and safety of spectinomycin+ lincomycin in feed and polyvitamin in drinking water.
In economic terms, to discuss: to improve production costs in pig farms,
Study to be carried out under the following schedule:




CRONOGRAMA = Time procedure

Incorporación de aditivos en lanta de alimentos = The adition of antibiótics in feed and vitamins in wáter

Traslado del alimento con aditivos a la granja del estudio = Feed taken to the farm and study initiated

Recolección de datos = Collection of data

Análisis de la información = Data analisis

## V. Technical team

VMD Adriana Bernal Canseco, in charge of blood sampling for total blood analysis and weights from weaning for the following three weeks, with the help and supervision of Dr. Victor O. Fuentes and the technical staff of the feed plant and farm personnel (operational, administrative and technical).

## VI. Variables

Weaning body weight (28 days) up to three weeks of study duration, 4th week final assessment of SAFETY AND EFFECTIVENESS.

Weight gain curve (ditto)

Survival %.

Presence of digestive or respiratory disorders, survival of piglets per group %.

Each piglet will be an experimental unit and each treatment is integrated by a group of 10 animals.

The study included four treatments, in which each piglet will be an experimental unit and where each treatment group is integrated by 10 individuals.

The study is reevaluated under a completely randomized statistical design (Steel and Torrie 1998); whose statistical model is: Yij = µ+ Ti + Eij.

Table 1 of Results of the use of Spectynomicin + Lyncomicin in feed and polivitamins in drinkin water

| **Early Weaning 21 - 28 days** | **Grup 1 Espectinomycin + Lincomycin** | **Grup 2 Idem + Vitamins** | **Grup 3 polivitamins** | **Group 4 Control** | **Weight Control vs treated** | **Mortality of Control vs treated** | **Morbility Infections between groups** | **Changes in Haemogram** |
|---|---|---|---|---|---|---|---|---|
| **Weaning weight** | **6 kg ± 0.2** | **6 ± 0,2** | **5,9 ± 0.3** | **6 ± 0.2** | **6 ±** | **0 vs 0** | **0 vs 0** | **NO DIFERENCES** |
| **Weight 1 week pos weaning** | **7.9 ± 0,3 kg** | **8.0 ± 0,25** | **7.8 ± 0.2** | **7.8 ± 0.2** | **No Signif** | **0 vs 0** | **0 tratados 1/10 No muerto** | **NO CHANGE** |
| **Weight 2 weeks pos weaning** | **9.5** | **9.0** | **9.1** | **9.0** | **idem** | **0 vs 0** | **0 vs 0** | **NO CHANGE** |
| **weight 3 weeks posweaning** | **11.9** | **12** | **11.5** | **11.6** | **idem** | **0 vs 0** | **0 vs 0** | **NO CHANGE** |
| **Weight 4 weeks pos weaningdestete** | **14.8** | **15** | **14.6** | **14.7** | **idem** | **0 vs 0** | **0 vs 0** | **NO CHANGE** |

## VII. RESULTS AND DISCUSSION

Results (Table 1) were tabulated and subjected to Had Oc, statistical tests to prove the efficacy and safety of spectinomycin-lincomycin added to the starter feed formula for piglets at weaning and the multivitamin in the drinking water. Duration of the trial: three weeks, AT THE FOURTH WEEK FINAL EVALUATION BETWEEN GROUPS

Groups 1, 2 and 3 development and growth was as expected. Group 2 shows a slight increase in weight, which although not significant, allows postulating that the combination of Spectinomycin-Lyncomycin and polyvitamins can be considered as EFFECTIVE AND SAFE combination to be used in weaned piglets. The control group development was slightly lower, although not significant, the weight of the control group can be considered as a cause of an environmental factor of the intensive exploitation in which the study was developed. Since they were exposed to the presence of endemic infections, a situation that Lincomycin - Spectinomycin have a recognized efficacy to prevent enteropathies (McOrist et al. 2000, Nathal et al, 2002). This combination has been useful for the control of swine dysentery since the 1970s (M. J. DeGeeter, & Harris, 1975).

Considering that infectious diseases in swine are the main cause of morbidity and mortality, the accessibility of adding anti-infective drugs prophylactically or methaphylactically becomes a necessity (Sargeat et al, 2019).

The importance of piglets achieving better performance is based on the control of all factors involved in their growth during the first week postweaning. In this study, it is observed that the combination of Spectinomycin-Lincomycin with the addition of polyvitamins is an option that allows a better gain and welfare of the piglets medicated with this combination.

Mortality and disease parameters endemic to the swine producer are mainly related to performance.

The chronic forms of endemic diseases in a swine farm are mainly, depression in feed conversion.

Depression in feed conversion efficiency (FCE) and growth, resulting in increased marketing and feeding time and uneven pig weights. Factors increasing the cost of raising pigs for the producer. In addition to management practices, such as sanitation and reductions of stressors, strategic use of an in feed antibiotic combination an polivitamins in drinking wáter. Water should be of the highestuality posible.

In addition to management practices, such as improving sanitation and reducing stressors, the strategic use of an feed antibiotic, such as Spectinomycin-Lincomycin, to control endemic diseases helps maintain consistent pig performance during the risk period, and the decision to include Spectinomycin-Lincomycin (PECOCILIN SP PREMIX) in this study is reflected in the results, to which the treated animals show a balanced weight gain, to which should be added that Lincomycin is a drug that has therapeutic approval against swine dysentery (Winkelman et al. , 2002).

The addition of polyvitamins (PECVITAM B) in this study allowed the FCE to give optimal results, an effect that is due to the action of polyvitamins on the morphology of the duodenal hairs, which increase their size in terms of height, thus presenting a greater area of absorption of food (Moore et al., 2011). The addition of polyvitamins (PECVITAM B) is considered an important factor in digestive well-being and antioxidant action which will allow an optimal FCE (Lauridsen et al., 2021).

## VIII. CONCLUSION

The safety and efficacy of Pecocillin SP Premix and Pecvitam B allow them to be used as prophylactic and/or metaphylactic therapy in swine in management situations with the presence of endemic viral or antibacterial diseases, and the addition of the polyvitamin contributes to the welfare of the medicated animals.

## BIBLIOGRAPHY

[1] DeGeeterM I. Harris D L. 1975. Effect of Lincomycin and Spectinomycin on Swine Dysentery. https://doi.org/10.2527/jas1975.4151333x

[2] Lauridsen C, Matte J , Lessard M, Celi P, Litta G. 2021. Role of vitamins for gastro-intestinal functionality and health of pigs. Anim Feed Sci & Tech 273: https://doi.org/10.1016/j.anifeedsci.2021.114823

[3] McOrist S. Muller Wager A. Kratzer D. Sjösten C-G. 2000. Therapeutic efficacy of water-soluble lincomycin-spectinomycin powder against porcine proliferative enteropathy in a European field study. https://doi.org/10.1136/vr.146.3.61

[4] Moore K L, Mullan B P,Pluske, J R Kim, J C,D'Souza D N, 2011. The use of nucleotides, vitamins and functional amino acids to enhance the structure of the small intestine and circulating measures of immune function in the post-weaned piglet. Animal Feed Science and Technology 165: 184-190 https://doi.org/10.1016/j.anifeedsci.2010.09.013

[5] Nathan L. W. Crane J P, Elfring G D. Kratzer D D, Meeuwse D, Dame M K, Buckham S L, Gebhart L C. Lincomycin-medicated feed for the control of porcine proliferative enteropathy (ileitis) in swine. J Swine Health Prod. 2002;10(3):106–110.

[6] Sargeant JM et al (2019). A systematic review of the efficacy of antibiotics for the prevention of swine respiratory disease. Animal Health Research Reviews 20, 291–304. https://doi.org/10.1017/S1466252319000185

[7] Winkelman NL, Crane JP, Elfring GD, et al. Lincomycin-medicated feed for the control of porcine proliferative enteropathy (ileitis) in swine. J Swine Health Prod. 2002;10(3):106–110.