評估益生菌複合物對保育豬腸道菌相、抗藥性及保健之影響

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摘要

本研究旨在探討益生菌複合物作為抗生素替代品，在離乳仔豬保育期應用的可能性。試驗設計分為無添加組（group A）、益生菌組（group B）及抗生素生長促進劑組（group C），共計 36 隻健康仔豬參與，進行長達 4 週的飼養試驗，並分析不同處理對腸道微生物群結構、生物多樣性及抗藥性菌株分布的影響。試驗期間各組皆未檢測得沙門氏菌（*Salmonella* sp.），反映良好的試驗環境衛生標準。益生菌組及無添加組表現出較高的菌相多樣性，以及相關菌屬如 *Lactobacillus* 和 *Prevotella* 的比例增加；其中益生菌組腸道耐藥性表現最低，其中產擴展型 β 內醯胺酶大腸桿菌（extended-spectrum β-lactamase-producing *Escherichia coli*，ESBL-EC）之分離率下降，雖未達統計上的顯著差異，仍可能有潛在影響。相較之下，抗生素生長促進劑組菌相表現趨向特化，且多重耐藥性基因之表現增強。綜合以上結果，本研究表明益生菌可促進仔豬腸道健康，可能助於降低抗藥性風險。建議養殖場在應用飼養技術時，適度平衡益生菌與抗生素的使用，有助於提升動物健康及減少抗藥性。

Evaluation of the Effects of Probiotic Complex on Gut Microbiota, Antimicrobial Resistance, and Health Care in Nursery Pigs

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Abstract

This study explores the feasibility of using probiotic complexes as alternatives to antibiotics during the weaning period in piglets. A total of 36 healthy piglets participated in the 4-week feeding trial, divided into three groups: additive-free (group A), probiotics (group B), and antibiotic growth promoters (group C). The research evaluated the effects on gut microbiota composition, diversity, and antibiotic-resistant strains. The research evaluated the effects on gut microbiota composition, diversity, and antibiotic-resistant strains. *Salmonella* sp. was not detected in any of the groups, highlighting the maintenance of high hygienic conditions. Both the probiotics and control groups showed greater microbial diversity and increased abundances of beneficial genera such as *Lactobacillus* and *Prevotella*. Notably, the probiotics group exhibited the lowest levels of antimicrobial resistance, reflecting a decreased isolation rate of extended-spectrum β-lactamase - producing *E. coli* (ESBL-EC), although the reduction was not statistically significant. In contrast, the antibiotics group presented a less diverse microbial profile alongside elevated expression of multidrug resistance genes. These results indicate that probiotics support gut health in piglets and can help mitigate the risks of antimicrobial resistance. To optimize animal health and reduce the emergence of resistance, farms are encouraged to find a balanced approach in deploying both probiotics and antibiotics.