

## **Medium chain fatty acids and monoglycerides as feed additives for pig production: towards gut health improvement and feed pathogen mitigation**

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**Abstract:** Ongoing challenges in the swine industry, such as reduced access to antibiotics and virus outbreaks (e.g., porcine epidemic diarrhea virus, African swine fever virus), have prompted calls for innovative feed additives to support pig production. Medium-chain fatty acids (MCFAs) and monoglycerides have emerged as a potential option due to key molecular features and versatile functions, including inhibitory activity against viral and bacterial pathogens. In this review, we summarize recent studies examining the potential of MCFAs and monoglycerides as feed additives to improve pig gut health and to mitigate feed pathogens. The molecular properties and biological functions of MCFAs and monoglycerides are first introduced along with an overview of intervention needs at different stages of pig production. The latest progress in testing MCFAs and monoglycerides as feed additives in pig diets is then presented, and their effects on a wide range of production issues, such as growth performance, pathogenic infections, and gut health, are covered. The utilization of MCFAs and monoglycerides together with other feed additives such as organic acids and probiotics is also described, along with advances in molecular encapsulation and delivery strategies. Finally, we discuss how MCFAs and monoglycerides demonstrate potential for feed pathogen mitigation to curb disease transmission. Looking forward, we envision that MCFAs and monoglycerides may become an important class of feed additives in pig production for gut health improvement and feed pathogen mitigation.

**Keywords:** Antibiotics, Feed pathogen mitigation, Growth promotion, Gut health, Immune enhancement, MCFA, Medium-chain fatty acids, Monoglycerides