

Impact of an agglomerate of sodium diformate and monolaurate on the reduction of PRRS virus load in nursery pigs

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Background & Objectives

Monolaurin glycerol (GML) inhibitory effect on enveloped viruses has been discussed for several years. Monolaurin glycerol can inhibit viral activity by destroying the virus envelope and promoting the production of interferon-gamma. Furthermore, evidence suggests that GML is more effective in inhibiting pathogens in an acidic environment, but its impact on enveloped viruses remains unclear. This study aims to investigate the effects of GML under acidic conditions on the expression of PRRS virus of nursery pigs.

Material & Methods

1520 nursery pigs (42 days old) were randomly assigned to two trial groups with 20 replicates (pens) per group. In the control group, 0.1% GML (>90% purity) was added to the basal diet, while the treatment group received 0.5% Formi® 3G (ADDCON, hereafter abbreviated as 3G, containing 18% GML and 74% sodium diformate) in the basal diet. Throughout the experimental period, blood samples were collected from nursery pigs every two weeks, and PRRSv Ct values in their blood were assessed using real-time PCR. Significance of differences between the treatment group and the control group was assessed using the P-value ($P < 0.05$).

Results

During the first four weeks (42-70 day-old), the PRRSv antibody levels in the 3G-group were significantly higher than those in the control group. Moreover, the PRRS Elisa S/P ratio in 3G-group remained stable within the range of 1.737 - 2.128, whereas 0.710 - 2.006 were measured in the control group. Regarding the virus transcription levels (Ct value), the PRRSv exhibited lower Ct values in the control group compared to the 3G-group, indicating a higher viral load in the former. The PRRSv expression decreased continuously in the 3G-group and after six weeks became undetectable (Fig. 1).

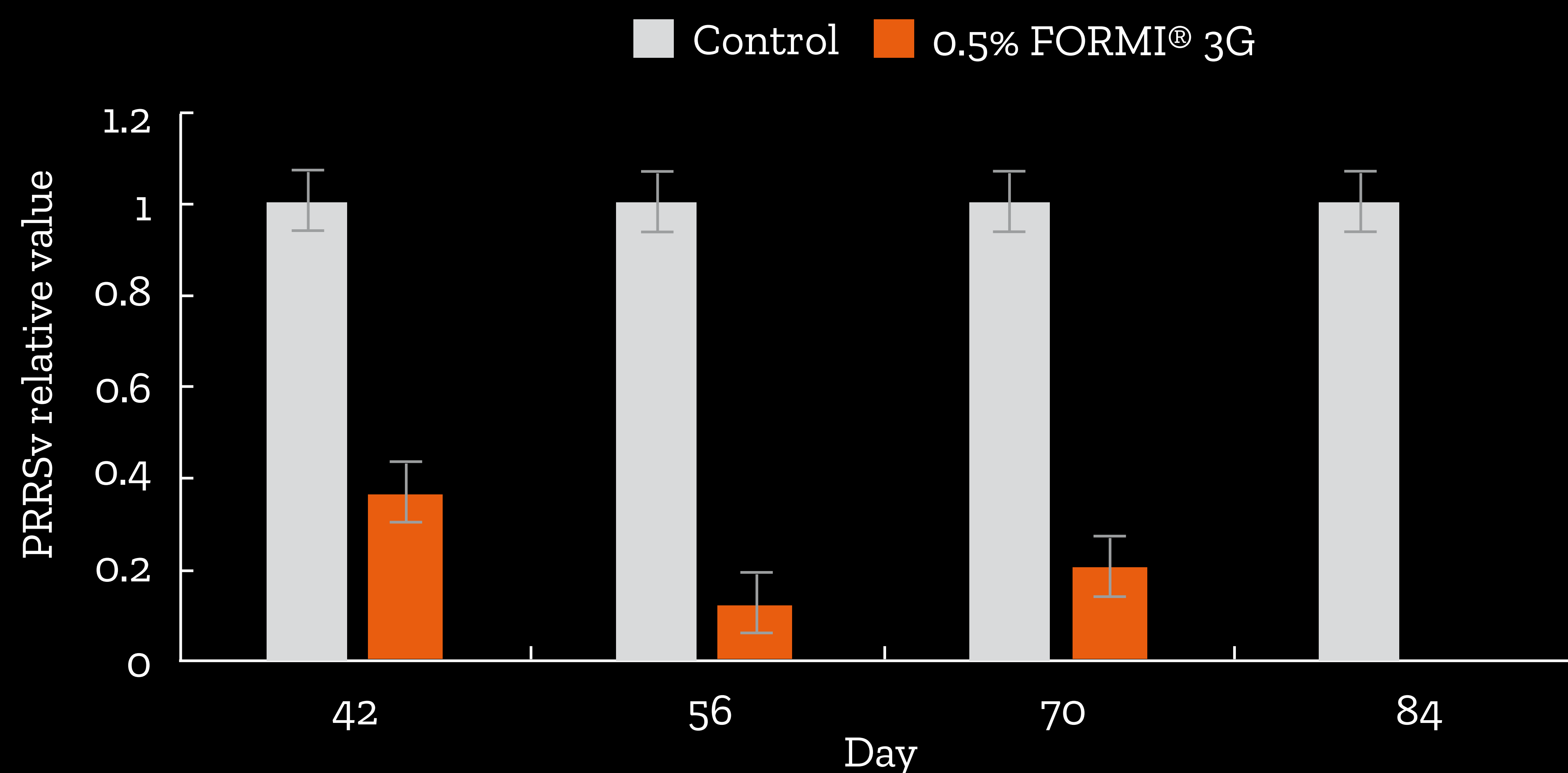
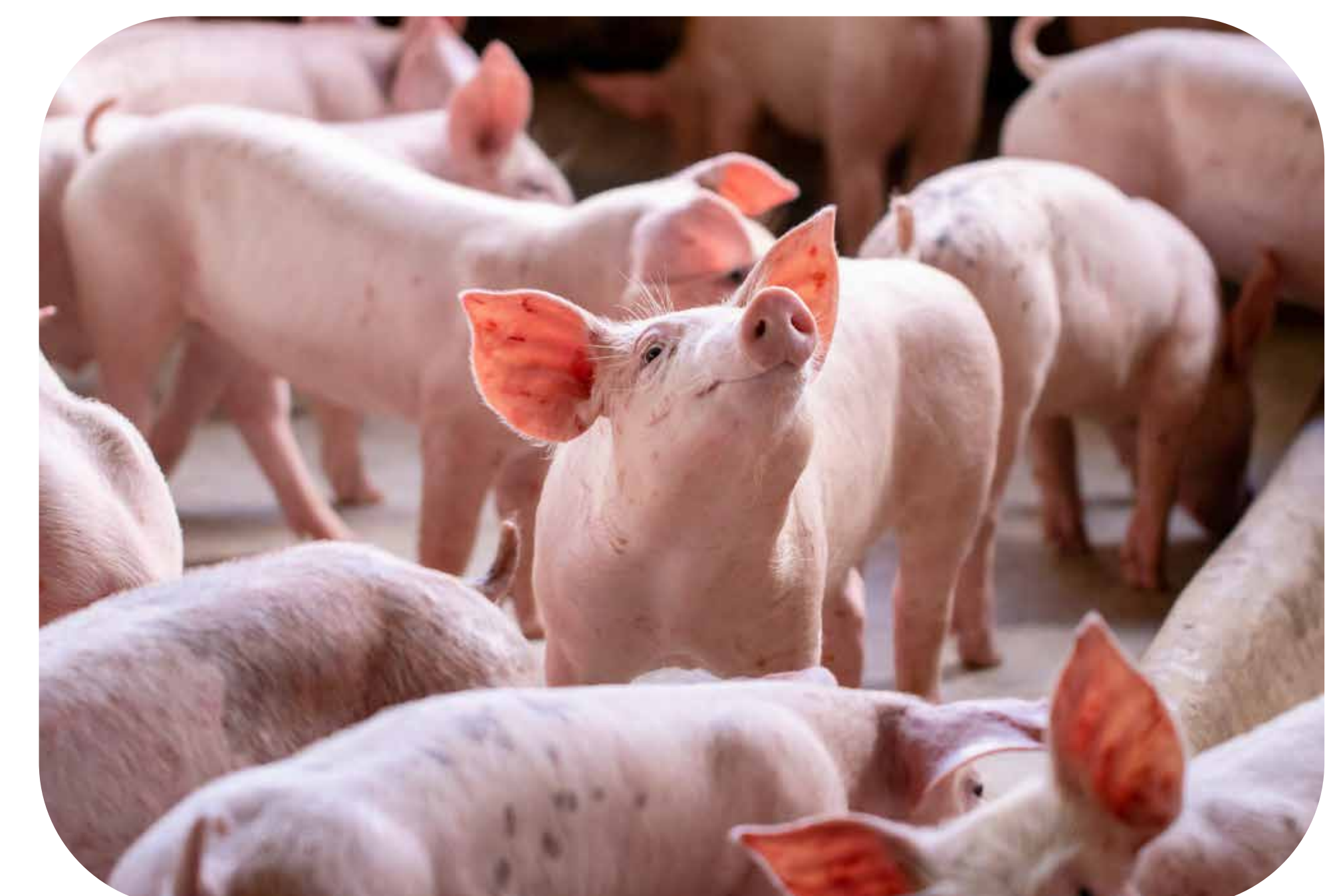


Figure 1.
The effect of adding FORMI® 3G on the expression of PRRSv in nursery pigs.

Discussion & Conclusion

The co-addition of sodium diformate and GML (3G) is associated with reduced PRRSv expression. Its mechanism of action may involve reducing the production of pro-inflammatory cytokines and enhancing interferon- γ release. The results also demonstrated that under the acid environment, GML has better effect on virus inhibition. Therefore, employing GML in an acidic environment - thus FORMI® 3G, appears to be a more reasonable strategy for the inhibition of PRRSv in nursery pigs.