

Review of: "Dietary supplementation of alpha-lipoic acid mitigates the negative effects of heat stress in broilers"

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Potential competing interests: The author(s) declared that no potential competing interests exist.

The study "Dietary supplementation of alpha-lipoic acid mitigates the negative effects of heat stress in broilers", which indicate that dietary supplemented with 500 mg/kg alpha-lipoic (ALA) acid mitigates the negative effects of heat stress in broilers by increasing the growth performance (final BW and ADG) and improving the intestinal health (intestinal structure and gut microbiota), and thus ALA could be one of the potential strategies to alleviate heat stress in broiler. In general, it is an interesting research and the experimental design is reasonable, and providing a deep understanding of the use of ALA in broiler. However, there are still some questions should be addressed, and in my opinion the article would be more perfect after finished them.

The first one is that the interpretation of several data was not exactly enough. For example, "Villus height and Villus height to crypt depth ratio were significantly lowered ($P<0.05$) in the HS group as compared to the NHS group, while ALA supplementation **significantly** improved ($P>0.05$) these parameters in heat-stressed broiler birds", which was described not consistent with the data in Fig.3.

The second one is that the data of mRNA expression of ileum seems to be questioned. For example, the mRNA expression of HSP70 and TXN in HS+ALA diet group was too variable to meet the academic requirements as all data were presented as mean \pm SEM.

The third one is that several sentences were not properly stated in the text. For example, "Although not statistically significant, the dietary ALA supplementation **improved** villus height and villus height to crypt depth ratio in heat-stressed birds", considering the values of villus height and villus height to crypt depth ratio in HS+ALA diet group was not statistically significant, it seems to use improve how much (%) of those indices would be more suitable.

Finally, if the authors could be supplementation of the information of differential metabolic pathways of intestinal microbiota which containing the difference founded in lipoate metabolism between *Helicobacter pylori* and *Pseudomonas aeruginosa*, it would be more perfect.