# CORRECTION

**Open Access** 

# Correction: Maternal zinc alleviates *tert*-butyl hydroperoxide-induced mitochondrial oxidative stress on embryonic development involving the activation of Nrf2/PGC-1α pathway

Liang Huang<sup>1†</sup>, Wei Gao<sup>1†</sup>, Xuri He<sup>1</sup>, Tong Yuan<sup>1</sup>, Huaqi Zhang<sup>2</sup>, Xiufen Zhang<sup>1</sup>, Wenxuan Zheng<sup>1</sup>, Qilin Wu<sup>1</sup>, Ju Liu<sup>3</sup>, Wence Wang<sup>1</sup>, Lin Yang<sup>1\*</sup> and Yongwen Zhu<sup>1\*</sup>

## Correction: J Animal Sci Biotechnol 14, 45 (2023) https://doi.org/10.1186/s40104-023-00852-1

Following publication of the original article [1], the authors reported that Fig. 3 were incorrect because there was naming error occurred during the archiving of electron microscopy micrographs of mitochondrial ultrastructure for maternal Zn treatment referring to Zn + pbs and Zn + BHP groups, resulting in the incorrect use of these images in Fig. 3D. The other elements of the Fig. 3D remain the same, and the interpretation of the results remains unchanged. This error does not affect the conclusions drawn in the paper.

<sup>†</sup>Liang Huang and Wei Gao contributed equally to this work.

The original article can be found online at https://doi.org/10.1186/s40104-023-00852-1.

\*Correspondence: Lin Yang ylin@scau.edu.cn Yongwen Zhu 408034085@qq.com

<sup>1</sup> State Key Laboratory of Livestock and Poultry Breeding, South China

Agricultural University, Guangzhou 510000, China

<sup>2</sup> Tongren Polytechnic College, Tongren 554000, China

<sup>3</sup> Enping Long Industrial Co. Ltd, Enping 529400, China



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/. The Creative Commons Public Domain Dedication waiver (http://creativecommons.org/publicdomain/zero/1.0/) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

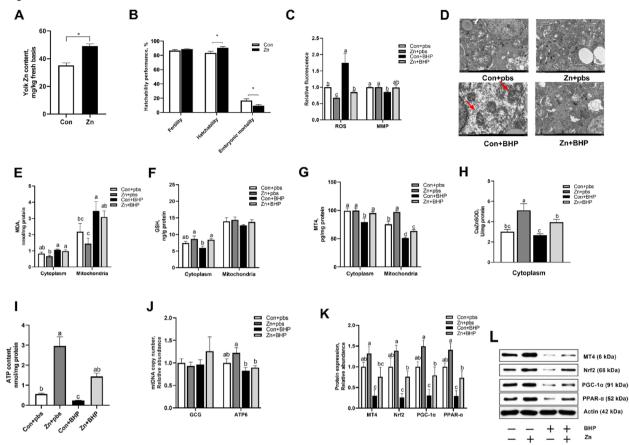
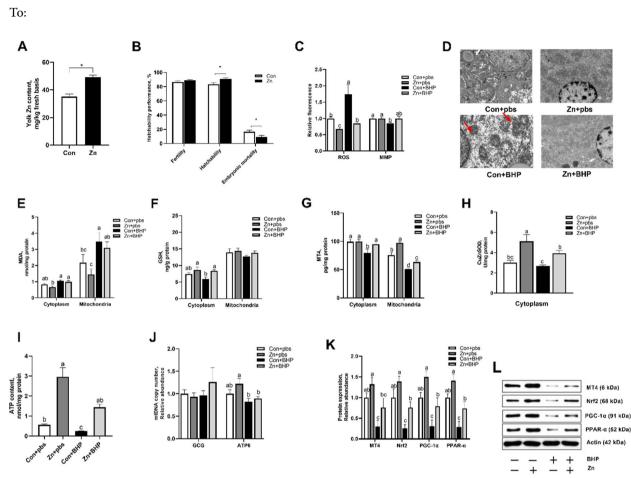


Figure 3 is corrected from:

**Fig. 3** Maternal Zn addition attenuated in ovo injected BHP-induced mitochondrial dysfunction in embryo. The maternal Con and Zn groups diets were supplemented with either 0 or 220 mg Zn/kg diet for female broiler breeders. The embryos from Con and Zn groups were subjected to in ovo injection of either pbs or 600 µmol/L BHP on E14. **A** Effect maternal Zn addition on egg yolk Zn content. **B** Effect maternal Zn addition on hatchability performance. **C** Effect maternal Zn addition and in ovo injected BHP treatment on mitochondrial ROS and MMP. **D** Representative electron microscopy micrographs of mitochondrial ultrastructure. **E–G** Effect maternal Zn addition and in ovo injected BHP treatment on work injected BHP treatment on CuZnSOD activity in isolated cytoplasm. **I–J** Effect maternal Zn addition and in ovo injected BHP treatment on hepatic ATP content and mtDNA copy number. **K** and **L** Effect maternal Zn addition and in ovo injected BHP treatment on hepatic ATP content and mtDNA copy number. **K** and **B** were analyzed using unpaired two-tailed Student's t-test (\*P < 0.05, n = 6), while graph bars in **C**, **E**, **G**, **H**, **I** and **J** marked with different letters on top represent statistically significant results (P < 0.05, n = 4-6) based on Tukey's post hoc analysis, whereas bars labelled with the same letter correspond to results that show no statistically significant differences. Data were mean  $\pm$  SEM



**Fig. 3** Maternal Zn addition attenuated in ovo injected BHP-induced mitochondrial dysfunction in embryo. The maternal Con and Zn groups diets were supplemented with either 0 or 220 mg Zn/kg diet for female broiler breeders. The embryos from Con and Zn groups were subjected to in ovo injection of either pbs or 600 µmol/L BHP on E14. **A** Effect maternal Zn addition on egg yolk Zn content. **B** Effect maternal Zn addition on hatchability performance. **C** Effect maternal Zn addition and in ovo injected BHP treatment on mitochondrial ROS and MMP. **D** Representative electron microscopy micrographs of mitochondrial ultrastructure. **E–G** Effect maternal Zn addition and in ovo injected BHP treatment on work injected BHP treatment on CuZnSOD activity in isolated cytoplasm. **I–J** Effect maternal Zn addition and in ovo injected BHP treatment on hepatic ATP content and mtDNA copy number. **K** and **L** Effect maternal Zn addition and in ovo injected BHP treatment on hepatic ATP content and mtDNA copy number. **K** and **B** were analyzed using unpaired two-tailed Student's *t*-test (\**P* < 0.05, *n* = 6), while graph bars in **C**, **E**, **G**, **H**, **I** and **J** marked with different letters on top represent statistically significant results (*P* < 0.05, *n* = 4–6) based on Tukey's post hoc analysis, whereas bars labelled with the same letter correspond to results that show no statistically significant differences. Data were mean  $\pm$  SEM

### The original article [1] has been updated.

Published online: 17 March 2025

### Reference

 Huang L, Gao W, He X, et al. Maternal zinc alleviates tert-butyl hydroperoxide-induced mitochondrial oxidative stress on embryonic development involving the activation of Nrf2/PGC-1α pathway. J Animal Sci Biotechnol. 2023;14:45. https://doi.org/10.1186/s40104-023-00852-1.