


[LOGIN](#)

## Online First Articles

Home  
 » Online First Articles  
 » DR-1675

# Effect of Nano Zinc Supplementation on Production Performance, Immune Response and Carcass Characteristics in Japanese Quail Broiler

DOI: 10.18805/ajdr.DR-1675 | Article Id: DR-1675

[Authors and affiliations](#)



N. Arulnathan, M. Chellapandian, K. Geetha, D. Thirumeignanam, M.P. Vijayakumar  
 drarulnutri@gmail.com

**Address :** Department of Animal Nutrition, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tirunelveli-627 358, Tamil Nadu, India.

Submitted Date : 7-04-2021 | Accepted Date : 31-08-2021 | First Online: 17-09-2021

## Abstract

**Background:** Nano-technology is currently an emerging field and giving promising results with cost economics in the poultry nutrition sector. A study was conducted to investigate the effects of nano Zn supplementation on production performance, immune response and carcass characteristics in Japanese quail broiler.

**Methods:** Synthesis of zinc oxide nano-particles was carried out by chemical method and characterized by standard techniques. Day old Japanese quail chicks (n=240) were randomly allotted in four treatment groups for feeding trial and fed with basal diet and source of zinc viz. for T<sub>1</sub> inorganic Zinc Oxide, for T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> nano Zinc Oxide was used at 75%, 50% and 25% levels of BIS recommendation for Zinc. Production parameters, immune response, carcass characteristics and cost economics were studied.

**Result:** Based on the data analysed T<sub>3</sub> and T<sub>4</sub> showed significantly (P<0.05) improved performance in production parameters like body weight gain and cumulative feed conversion ratio than T<sub>1</sub> and T<sub>2</sub>. HI, titer value and carcass characteristics data also showed similar trend.

## Keywords

Japanese quail Nano zinc oxide Production performance

## References

1. Attia, Y.A., Abd E-HAE, Zeweil, H.S., Qota, E.M., Bovera, F., Monastra, M., Sahledom, M.D. (2013). Effect of dietary amounts of organic and inorganic zinc on productive and physiological traits of white pekin ducks. *Animal*. 7(6): 700-895.
2. Attia, Y.A., Addeo, N.F., Abd Al-Hamid, A.E., Bovera, F. (2019). Effects of phytase supplementation to diets with or without zinc addition on growth performance and zinc utilization of white pekin ducks. *Animals*. 9(5): 280.
3. Azza Hafez, Eldsokey Nassef, Mohamed Fahmy, Mabrouk Elsabagh, Abdelnasser Bakr, Elsayed Hegazi. (2019). Impact of dietary nano-zinc oxide on immune response and antioxidant defense of broiler chickens. *Environmental Science and Pollution Research*. 27: 19108-19114.
4. Bureau of Indian Standards (2007). New Delhi, India.
5. Fathi, M. (2016). Effects of zinc oxide nanoparticles supplementation on mortality due to ascites and performance growth in broiler chickens. *Iranian Journal of Applied Animal Science*. 6(2): 389-394.
6. Fayiz, M., Reda, Mohamed, T., El-Saadony, Talaat, K., El-Rayes, Adel, I., Attia, Sabry, A.A., El-Sayed, Sarah, Y.A., Ahmed, Mahmoud Madkour and Mahmoud Alagawany (2021). Use of biological nano zinc as a feed additive in quail nutrition: Biosynthesis, antimicrobial activity and its effect on growth, feed utilisation, blood metabolites and intestinal microbiota, *Italian Journal of Animal Science*. 20(1): 324-335.
7. Geetha, K., Chellapandian, M., Arulnathan, N. and Ramanathan, A. (2020). Nano zinc oxide-An alternate zinc supplement for livestock. *Veterinary World*. 13(9): 121-126.
8. Getie, S., Belay, A., Chandra Reddy, A.R., Belay, Z. (2017). Synthesis and Characterizations of Zinc Oxide Nanoparticles for Antibacterial Applications. *Journal of Nanomedicine and Nanotechnology*. S8: 004.
9. Javad Safaei-Ghomi, Mohammad Ali Ghasemzadeh and Safura Zahedi (2013). ZnO nanoparticles: A highly effective and readily recyclable catalyst for the one-pot Synthesis of 1, 8-dioxo-decahydroacridine and 1, 8-dioxo-octahydro-xanthene derivatives. *J. Mex. Chem. Soc*. 57(1): 1-7.
10. Karthikeyan, N., Muthusamy, P., Raja, A., Vijayarani, K., Wilfred Ruban, S., Varun, C.A. (2017). Growth performance and carcass traits as influenced by dietary supplementation of zinc in broiler chicken. *International Journal of Chemical Studies*. 101(56): 101-105.