

# Veterinary

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## D Nagalakshmi

Sri P.V. Narasimha Rao Telangana State University for Veterinary, Animal and Fishery Sciences,  
India

### Scope of reducing zinc requirements in animals with supplementation from organic sources

Zinc (Zn) is an essential trace mineral, influencing various biological functions by being a cofactor for more than 300 metalloenzymes but is highly deficient in soils, feeds and fodder in most parts of world and India. Mostly in diets, it is supplemented from inorganic sources and with a large safety margin to avoid deficiency. But its over supplementation could affect the availability of other essential minerals due to antagonism resulting in low production, waste of minerals causing environmental pollution. To overcome this problem chemically inert, more stable and highly bio-available organic minerals (OM) were developed. Hence, the higher bio-available OM could lower the requirement of the minerals in animals compared to inorganic minerals and could also reduce its excretion and environmental pollution. Based on this concept, series of experiments were conducted on rats, broiler chicken and buffalo heifers to evaluate the effect of replacing inorganic source of Zn ( $ZnSO_4/ZnCO_3$ ) with various organic sources. Replacement of 12 ppm inorganic Zn ( $ZnCO_3$ ) with 12 ppm organic Zn (Zn-nicotinate) improved ( $P<0.05$ ) antioxidant status, immune response and reproductive efficiency in rats, while there productive performance was not affected by reducing the Zn supplementation by 75% (9 ppm) and similarly growth performance, haemato-biochemical constituents and immunity was not affected by 50% reduction (6 ppm). The study in broiler chicks indicated that replacing 40 ppm Zn ( $ZnSO_4$ ) with 30 ppm Zn added as Zn-glycinate improved ( $P<0.05$ ) feed efficiency, antioxidant status and immune responses and further reduction by 25% (10 ppm) did not affect the growth and feed efficiency in birds. In buffalo heifers, it was observed that 100% substitution of inorganic Zn (140 ppm) with organic source (Zn-proteinate) resulted in better ( $P<0.05$ ) antioxidant status, immune response with more number of large size follicles with greater diameter in ovaries. Further, serum biochemical parameters, antioxidant enzyme activities, humoral and cell mediated immunity and ovarian follicular development were comparable between 80 ppm Zn as Zn-proteinate and 140 ppm as  $ZnSO_4$ .

### Biography

D Nagalakshmi has completed her MVSc and PhD in Animal Nutrition from Indian Veterinary Research Institute and selected for ICAR-JRF fellowship and CSIR-SRF fellowship during MVSc and PhD, respectively. Presently, she is a Professor and University Head of Animal Nutrition in SPVNR Telangana State University for Veterinary, Animal and Fishery Sciences. She has published more than 100 research papers in reputed national and international journals and 5 book chapters and is Referee for many reputed journals. She has received many national and state awards for her contributions in field of animal nutrition which includes Research Scientist Award from ANGRAU University in 2006, Punjab Rao Deshmukh Women Agriculture Scientist Award of ICAR in 2010 and Award of Research Excellence of the Indus Foundation in 2014.

[dnalakshmi@rediffmail.com](mailto:dnalakshmi@rediffmail.com)

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