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Effect of silver nanoparticles on antibody response against recombinant VP2 protein of Infectious bursal disease virus

Sudhakar Awandkar*, Prabhakar A. Tembhurne, Nitin V. Kurkure, Sandeep P. Chaudhari, Sachin W. Bonde & Vijay C. Ingle

¹Department of Veterinary Microbiology; ²Department of Veterinary Pathology;
³Department of Veterinary Public Health; ⁴Department of Veterinary Biochemistry, Nagpur Veterinary College,
Nagpur – 440 006, Maharashtra, India

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A strong humoral response against Infectious bursal disease virus (IBDV) in breeder chickens transfers protective maternal immunity in chicks, and protect them from the disease. The present study explains the modulatory effect of silver nanoparticles on humoral immune response against recombinant VP2 (rVP2) protein of IBDV. The hypervariable VP2 gene segment of field IBDV was amplified and cloned into pGEM-T Easy plasmid followed by subcloning into pET32a plasmid vector. Truncated rVP2 protein expressed in *E. coli* BL32DE3 cells, showed reactivity with specific anti VP2 chicken antibodies. The results of immunoblot revealed its utility in serological diagnosis. The rVP2 protein was evaluated for immunogenic potential by vaccinating the chickens with and without silver nanoparticles (AgNP). The titers induced by rVP2 protein blended with montanide oil were non-significant when compared with titers induced by the conventional vaccines. The IgY response was highly significant in chickens vaccinated with rVP2 protein blended with montanide oil and AgNP than in chickens vaccinated with conventional vaccines or rVP2 protein in montanide oil without AgNP. The results represent Infectious bursal disease virus rVP2 protein as a promising candidate for the differentiation of vaccinated versus infected and sero-diagnostic tools. The current study elucidated the adjuvanticity effect of AgNP on IBDV rVP2 protein potency for the first time.

Keywords: AgNP, VP2, Montanide oil, IgY