

Effects of *in ovo* injection of nanocurcumin on intestinal development and serum parameters in chicken embryo

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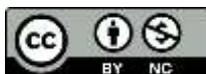
Abstract

The objective of the present study was to investigate the effects of *in ovo* injection of nanocurcumin on intestinal histomorphology and some serum components of the hatched chicks. The chicken eggs were injected with 1, 10, 100, 1000, and 10000 ppm of nanocurcumin, and the other two groups were used as control and injected control (saline). At the end of the experiment, blood and tissue samples were collected for biochemical and histological examination. For histological examination, small intestine was sampled and routine histological methods containing fixation, dehydration, clearing and paraffin embedding were used. Sections were stained with hematoxylin & eosin for light microscopy evaluation. Blood biochemical parameters were analyzed by an automatic analyzer. Results indicated that *in ovo* injection of saline significantly reduced albumin, globulin, total protein and AST (aspartat aminotransferase) compared to the control group, so that injection of nanocurcumin corrected the reduction of these factors. Uric acid was increased by injection of 1, 10 and 100 ppm nanocurcumin compared to the other groups. Blood glucose levels decreased slightly with increasing the dose of nanocurcumin, and in the 1000 ppm nanocurcumin group, the levels were significantly lower than those of the control. *In ovo* injection of 1000 ppm nanocurcumin significantly increased the villi height and villus height/crypt depth ratio compared to the saline and 1 ppm nanocurcumin groups. Although the primary purpose of this study was to evaluate the effects of *in ovo* administration of nanocurcumin, it was demonstrated that the use of saline in the *in ovo* injection was inappropriate. In conclusion, *in ovo* injection of nanocurcumin corrected saline-altered serum factors, lowered blood sugar, and increased the intestinal absorption surface.

Key words: Nanocurcumin, *In ovo* injection, Intestinal histomorphometry, Blood biochemical parameters

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