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JZUS-B

Effects of taurine and housing density on renal function in laying hens

Key words: Rearing pattern, Welfare, Taurine, Laying hens, Renal impairment

Research Summary

This study mainly focused the possibility of ameliorating renal impairment, increasing productivity, enhancing health and promoting welfare in laying hens by reducing housing density and by dietary supplementation with taurine and summarized the key roles they played in the following aspects:

- **Histological examination**
- **Quantification of SCr, BUN, SUA, NAG and GLU**
- **Changes in iNOS**
- **Effect of taurine and different housing modes on NF-κB DNA binding activity**
- **Real-time quantitative RT-PCR analysis of gene expression**
- **The detection of TNF−α levels by ELISA**
- **Activities of SOD and levels of T-AOC and MDA in the kidney**

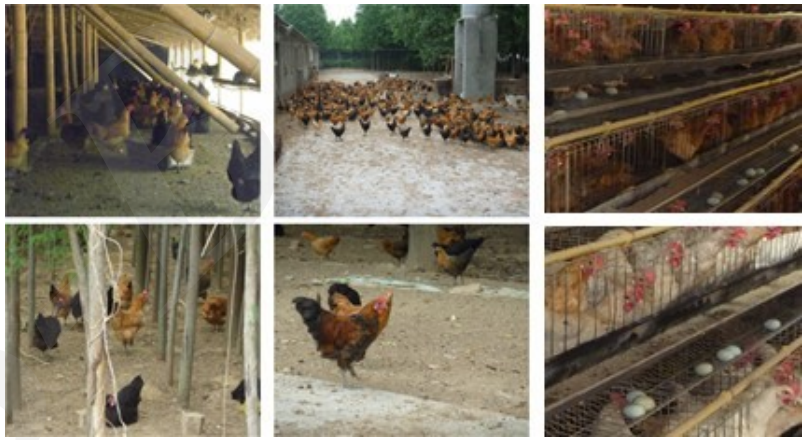
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Innovation points

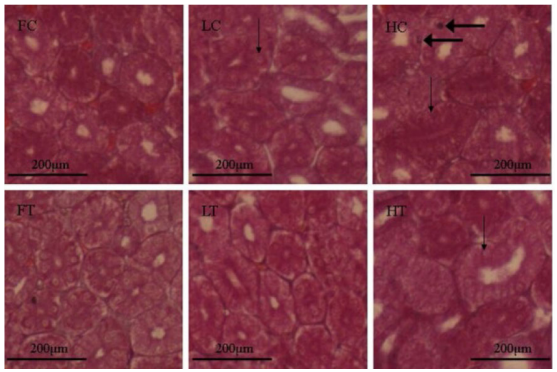
- **Introduction** of the putative protective effects of supplemental taurine and reduced housing density on renal function in laying hens.

- **Summary** of taurine supplementation, and rearing free-range or in low−density housing can lessen morphological renal damage, inflammatory mediator levels and oxidation levels and increase anti−oxidation levels.

- **Emphasis** of taurine supplementation and a reduction in housing density can ameliorate renal impairment, increase productivity, enhance health and promote welfare in laying hens







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Table 1 Ingredient composition and nutrient content of diets

Table 2 Primer sequences of targeted genes and β−actin

Fig. 1 The clinical photos of laying hens

Fig. 2 Histology of the kidney in laying hens. Renal sections were stained with H&E (original magnification 200 X)

Fig. 3 SCr, BUN, SUA, NAG and GLU levels

Fig. 4 Changes in SOD activity and T−AOC, MDA levels in kidney

Fig. 5 Effect of taurine on NF−κB DNA binding activity by EMSA analysis in renal tissue from laying hens

Fig. 6 Changes in IFN−γ, IL−4, IL−10 and PPAR−α gene expression in laying hen kidneys

Fig. 7 Changes in iNOs, TNF−α levels and TNF−α gene expression in the kidneys of laying hen

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