

News & Comments

Altitude-Variation of gut Microbiota in Tibetan Chicken

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More than 3,000 meters above sea level, the Tibetan plateau is home to both native Tibetans and animals that have adapted to the environment of the plateau and acquired distinctive genetic predispositions, lifestyles, and food preferences. Due to the need for domestication to meet the needs of the interior market, Tibetan chickens have been brought to the plain's region.

Previous research has shown that gut microbes are crucial for chickens' growth, immunity, and performance in maintaining the integrity of their internal environment. The degree of similarity of the intestinal microbiota was shown to relate to geographic distance, and it has been reported that the cecal microflora diversity of Tibetan chickens from five high-altitude locales is distinct. The same meals were freely given to the chickens grown at farms at high and low altitudes.

The article was published in September issue of Poultry Science.

People who live in high and low locations have dominant bacterial communities at the phylum level. Similar to what has been observed in people and pigs, the main author Zeng stated that "our results demonstrated that the microbial diversity in Tibetan chickens was much lower at high elevations than at low altitudes."

He added, "We also found that altitude and both chicken gut parts, the cecum and ileum, have unique microbial compositions." In the ileum of Tibetan hens, the relative abundance of the phylum Firmicutes tended to rise with elevation. According to a prior study, a higher Firmicutes to Bacteroidetes ratio in a microbial community is associated with greater dietary energy absorption.

However, a study of Murphy's article also revealed that energy harvesting was unaffected by a high Firmicutes to Bacteroidetes ratio in response to a high-fat diet. In general, after Tibetan hens were transferred to the flatlands, the variety and composition of gut microbiota changed. Environmental variables were associated with the distribution of bacterial species. Bacteroides, Peptoclostridium, and Ruminococcus had high expression abundance at the genus level and had stronger correlations with other microbiota species. On the flatlands as opposed to the plateau, Tibetan chickens put on weight more quickly. By boosting host energy and glycan production, gut bacteria may aid Tibetan hens in their adaptation to high altitude conditions. The results of this study offer crucial insight into how well Tibetan chicken can adapt to the environment.



Journal Reference

Du X. *et al.*, 2022. Altitude-adaption of gut microbiota in Tibetan chicken. *Poul. Sci.*, 101: 1011998.

KEYWORDS

Tibetan chicken, high-altitude adaption, gut microbiota, 16S rRNA, environment

