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Impact of Bioactive Compounds Found in Silkie Chickens on the Gene Regulation Network and Meat Quality

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Introduction

Due to their unique characteristics and remarkable appearance, silkie chickens have long piqued the interest of poultry aficionados all over the world. In addition to their aesthetic value, Silkie chickens have drawn attention for their possible health advantages, especially in traditional Chinese medicine, where they are valued for their alleged therapeutic qualities. In-depth studies of the bioactive substances found in Silkie hens have recently been conducted, revealing their effects on meat quality and clarifying the underlying gene regulation networks. This article discusses the importance of Silkie chickens in contemporary agriculture and human health while setting out to unearth its hidden gems. Silkie hens are unique breeds that originated in China and are distinguished by their dark skin, fluffy feathers, blue earlobes, and five toes rather than the typical four. Silkie chickens, which have long been prized in Asian societies for their distinctive look and alleged therapeutic benefits, have also attracted interest in Western nations as decorative birds and wholesome meat sources [1].

Description

In addition to being a source of protein, silkie chicken meat has a number of bioactive substances that may have health advantages. Numerous bioactive substances, such as carnosine, anserine, collagen, and special peptides, have been found in Silkie chicken meat. Silkie chicken meat contains high levels of the dipeptides carnosine and anserine. These substances have been connected to a number of health advantages, such as anti-inflammatory, antioxidant, and maybe neuroprotective qualities. Silkie chicken flesh is an excellent nutritional item for supporting general health and well-being because of its high levels of carnosine and anserine. Another important bioactive substance that is prevalent in Silkie chicken flesh is collagen. Collagen is essential for supporting general tissue integrity, fostering joint function, and preserving skin health. Silkie chicken meat is a beneficial addition to the diet for people looking to improve their general health and vitality because it may help with wound healing, joint health, and skin elasticity [2].

Unique peptides found in silkie chicken flesh have a variety of bioactive qualities, such as immunomodulatory, antihypertensive, and antibacterial activities. These peptides have the potential to be used in the creation of nutraceuticals and functional foods that support and prevent human health. The bioactive substances found in Silkie chicken meat are important in determining the quality of the meat in addition to their health-promoting qualities. According to studies, Silkie chicken meat's distinct blend of bioactive chemicals gives it attractive qualities like flavor, juiciness, and tenderness. Silkie chicken meat is a popular option for cooking because of its soft feel, which is a result of its high collagen content. When collagen is hydrolyzed while cooking, gelatin is created, which improves the meat's succulence and tenderness [3].

Carnosine and anserine, which are found in Silkie chicken meat, help hold onto moisture while cooking, making the meat juicy and flavorful. By acting as organic water-binding agents, these substances stop moisture loss and provide a soft, moist finished product. The unique flavor profile of Silkie chicken flesh is also influenced by the bioactive substances that are contained in it. Particularly, carnosine has been linked to umami taste, which enhances the meat's overall flavor by adding depth and richness. The sensory qualities of Silkie chicken flesh are further enhanced by the combination of special peptides and amino acids, which makes it a highly desired culinary component. Researchers may now examine the underlying gene regulation networks linked to the bioactive substances found in Silkie chicken flesh thanks to recent developments in molecular biology. Scientists hope to learn more about how these substances affect meat quality and maybe alter customers' physiological processes by clarifying the molecular mechanisms at play.

Researchers have discovered genes and pathways linked to the creation and metabolism of bioactive substances in Silkie chicken tissues by employing methods including RNA sequencing and gene expression profiling. The genetic foundation of meat quality characteristics and the control of important metabolic pathways involved in the manufacture of bioactive compounds have both been better understood thanks to these investigations. The expression of genes involved in the production and metabolism of bioactive compounds is largely controlled by transcription factors. Researchers can find possible targets for genetic modification to increase the production of desired bioactive chemicals in Silkie chicken meat by describing the transcriptional regulatory networks that control these activities.

In Silkie chicken tissues, epigenetic changes like DNA methylation and histone modifications also affect gene expression patterns and help control the manufacture of bioactive compounds. Gaining insight into the epigenetic mechanisms that underlie these processes could open up new possibilities for boosting the nutritional content and meat quality of Silkie chicken products. The identification of bioactive substances in Silkie hens and the clarification of their effects on gene regulation networks and meat quality have important ramifications for human health and agriculture. Research on Silkie chickens can provide valuable insights for breeding programs that aim to produce poultry with improved nutritional value and meat quality [4,5].

Conclusion

Potential health advantages of consuming Silkie chicken meat enhanced with bioactive substances include anti-inflammatory and antioxidant protection as well as support for the health of the skin and joints. By lowering the risk of chronic illnesses like osteoarthritis, neurological diseases, and cardiovascular disease, consuming Silkie chicken products may enhance general health and wellbeing. Silkie hens are more than simply an eye-catching breed; they are also stores of bioactive substances with a variety of health-promoting qualities. The significance of investigating traditional livestock breeds for their potential benefits to agriculture and human health is highlighted by the discovery of these chemicals and their effects on meat quality and gene regulation networks. The introduction of Silkie chicken products into the global food industry has the potential to provide consumers wholesome and tasty options that promote optimal health and wellness as long as research in this area continues to progress.

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Conflict of Interest

There are no conflicts of interest by author.

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