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Myths and realities of broiler chicken consumption

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Abstract

The poultry industry relies on continuous scientific advancements to optimize the health, welfare, and productivity of broiler chickens. Despite their efficiency in production, persistent myths surrounding broiler consumption raise consumer concerns about potential health implications. This study systematically analyzes existing literature to debunk prevalent misconceptions and illuminate the scientific realities of broiler farming. In Tamil Nadu, where poultry farming has transitioned from subsistence to commercial, understanding and dispelling these myths are essential for the industry's sustained growth. Scientific evidence refutes claims of growth-promoting hormones in broiler feed, emphasizing instead the significance of selective breeding, proper nutrition, and veterinary oversight in achieving rapid growth. Additionally, this study explores alternatives to prolonged antibiotic use to mitigate antimicrobial resistance risks. Contrary to common belief, consumption of broiler chicken has no proven correlation with early puberty or obesity in adolescents. Addressing these misconceptions is vital for fostering informed decision-making among consumers and ensuring the continued success of the poultry industry.

Keywords: Broiler chicken, myths, realities and consumption

Introduction

India is predominantly an agricultural country, and poultry farming is a rapidly growing sector. India's total poultry population is 851.81 million, ranking fifth in the world ^[1]. The average number of poultry slaughtered for meat production is 2.90 billion, with poultry meat contributing 4.47 million tonnes, which is 50.84% of the total meat production in India ^[1]. Broiler chickens, which grow from a hatch weight of 65 grams to approximately 1.5-2 kg within six weeks, are a crucial part of this industry due to their high protein content and feed conversion efficiency. Broiler chickens are essential for global food security, protein supply, and employment. However, myths regarding their raising and consumption have created health concerns among consumers, such as early puberty in girls, obesity, and antimicrobial resistance. This misinformation, spread largely via social media and internet food reviewers, negatively affects the broiler industry. This report performs a detailed analysis of poultry science literature to debunk these myths and explain the scientific bases behind broiler production.

Selective Breeding

Modern broiler chickens are the result of extensive selective breeding, focusing on economic traits such as faster growth rates, higher meat yield, and improved feed conversion efficiency. Selective breeding has led to significant genetic progress, resulting in broilers that grow remarkably faster and larger than their ancestors. This progress is due to a combination of genetic selection and improved rearing methodologies, including balanced diets, vaccinations, deworming, and controlled environmental conditions. Humans have domesticated plants and animals for thousands of years, leading to dramatic changes in appearance and behaviour from their wild ancestors. The modern broiler is a prime example of these changes, with significantly larger muscle mass and increased meat yield due to fifty years of selective breeding and advancements in poultry science. As per the study conducted by Havenstein *et al.* (2003), animal geneticists and poultry nutritionists performed a comparative experiment on broilers from 1957 and 2001 ^[8]. The broilers were fed with poultry diets from their respective years. Remarkably, broilers from 1957 grew around four times slower than

those from 2001. This study highlights five decades of progress in poultry science [8].

Misinformation about Hormones

The myth that broilers are fed growth-promoting hormones is widespread but unfounded. Scientific evidence refutes this claim, emphasizing that growth hormones are too expensive and ineffective for young chickens that reach market weight within six weeks. The cost of administering hormones would exceed the total production costs, making it an impractical and unprofitable practice. Moreover, the use of hormones in poultry is banned and heavily regulated globally [3]. Studies, such as the one conducted by Esquivel Hernandez *et al.* (2016), show that exogenous somatotropin administration does not promote growth in broilers due to the down-regulation of tissue somatotropin receptors [4]. The rapid growth of broilers is instead attributed to selective breeding and optimal rearing conditions.

Antibiotic Residues and Drug Resistance

Antibiotics are used in the broiler industry to treat diseases, but prolonged use can lead to antimicrobial resistance, posing a global public health threat. Antibiotic-free poultry production is becoming increasingly important, with developed countries leading the way. In developing countries, there is a need to strictly regulate antibiotic use and promote awareness about antimicrobial resistance [5]. To combat this issue, alternative approaches such as phytochemical feed additives, probiotics, organic acids, amino acids, enzymes, and nanoparticles are being explored [5]. Raising awareness among poultry farm workers, marginal farmers, and consumers about the dangers of antibiotic resistance and the benefits of antibiotic-free poultry is crucial.

Early Onset of Puberty and Obesity

The belief that broiler consumption leads to early puberty and obesity is a myth. Studies, such as those conducted by A. Subashree (2020), indicate that non-food factors play a more dominant role in determining puberty onset [7]. Junk food consumption, high-fat diets, and genetic predispositions are more likely causes of early puberty than broiler consumption [6]. Broiler chicken is a high-protein, low-fat meat that does not contain carbohydrates, making it an unlikely cause of obesity. The pathophysiology of obesity is complex, involving genetic, biological, and societal factors. Junk foods, rich in carbohydrates and fats, are more likely to contribute to obesity than broiler meat [7].

Low-Cost Protein and Cost-Effective Production

Broiler chicken production has seen exponential growth due to low production costs and high economic returns. Despite challenges such as infectious diseases and poor biosecurity, broilers remain a rich source of affordable protein. In a populous country like India, where many people suffer from malnutrition, broilers provide an accessible and nutritious food source. Pediatricians and gynecologists often recommend broiler chicken for malnourished children and women with infertility problems to address protein deficiencies [5].

Summary and Conclusion

The use of growth hormones in chicken production is unrealistic and unprofitable, as these compounds do not promote growth in young chickens and are illegal in many countries [3]. Antibiotics used in broilers are prescribed by

veterinarians to control diseases, with minimal risk of antimicrobial resistance due to the short market age of broilers. Poultry consumption does not lead to early puberty or obesity, refuting these misconceptions [6, 7]. Broiler chicken production, characterized by faster growth rates, higher meat yield, and improved feed conversion efficiency, is a rich source of protein available at an affordable cost. The improvement of poultry meat production results from successful collaborations in genetics, nutrition, microbiology, immunology, management, engineering, and food processing. Health providers, policymakers, food science professionals, food producers, and veterinarians must disseminate accurate information to educate consumers and eliminate false concerns about broiler meat, sustaining the growth of the poultry industry in Tamil Nadu and supporting global food security [2, 4, 5].

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