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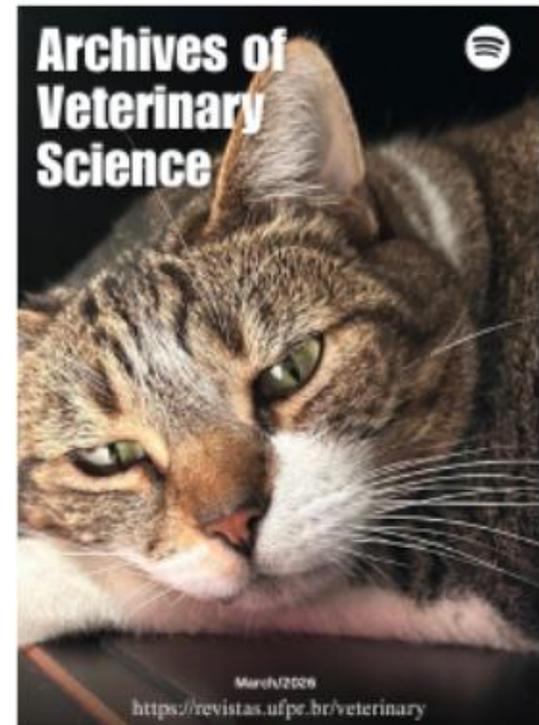
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The incidence of pododermatitis on broiler carcasses: lesion characteristics and sensitivity of acetic acid on associated bacteria

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Abstract. Broiler chicken feet are used as food and in the production of gelatin in many countries. Pododermatitis is a common disease in broiler chicken farming, which can affect the quality of broiler feet and be a perennial source of pathogenic bacteria that threaten public health. This research aimed to describe the lesion characteristics (macroscopic and histopathological) of pododermatitis in slaughtered broiler chickens, identify the associated pathogenic bacteria, and evaluate their sensitivity to acetic acid. One hundred thirty-six samples of pododermatitis lesions were subjected to morphological examination, and 129 underwent bacteriological examination to isolate and identify pathogenic bacteria using standard microbiological and biochemical tests. All isolated bacterial strains were tested for sensitivity to acetic acid using the agar dilution method. Pododermatitis samples of different scores underwent histopathological analysis. The results showed that score 4 was the most common (37.5%) for pododermatitis with an area of 2.91±2.00 cm². Pododermatitis scores 3 and 4 showed the same microscopic lesions, including full-thickness epidermal ulcerations. Bacteriological analysis revealed that all 129 pododermatitis samples were positive, and 184 bacterial strains were isolated and identified. *Staphylococcus aureus* was the most frequently isolated bacterium (66.30%), and the second- and third-most prevalent were *Escherichia coli* (19.57%) and *Staphylococcus hyicus* (5.98%), respectively. Acetic acid was particularly effective against all tested bacterial strains (*Staphylococcus aureus*, *Staphylococcus hyicus*, *Escherichia coli*, *Salmonella enterica*, *Shigella flexneri*, and *Shigella sonnei*), with an average minimum inhibitory concentration (MIC) of 0.08%. In conclusion, broiler pododermatitis was a dominant disease, and *S. aureus* was the most important pathogen associated with pododermatitis in broiler chickens. Acetic acid was an effective product for controlling the bacteria involved in pododermatitis.

Keywords: Pododermatitis, lesions, incidence, broiler chickens, bacteria, acetic acid.

1. Introduction

In recent years, the poultry industry has experienced remarkable growth, resulting in a significant increase in the production of broilers and white meat at affordable costs for consumers. The marketing and use of broiler feet in human food are widespread practices in many cultures around the world. As a source of protein, chicken feet are also prized for their nutritional value (Taufik et al., 2010). However, it is essential to emphasize the importance of decontaminating the feet to ensure their safety. Consumers are becoming increasingly aware of these issues, thus favoring a more responsible approach to the marketing and use of chicken feet. Chicken feet are also used as raw material in the production of gelatin (Tiona and Rahelivololoniaina, 2023). Gelatin is widely used in the food industry to thicken, gel, and stabilize various products such as confectionery, desserts, yogurts, and even some savory dishes. This use of chicken feet helps minimize waste by efficiently harnessing animal resources to produce versatile ingredients in various culinary and industrial applications.

Pododermatitis, also known as foot pad dermatitis, is a disease characterized by necrotic lesions on the plantar surface of the foot pads of growing broilers (Jacob et al., 2016). Symptoms of pododermatitis include hard, scaly foot pad skin, abnormal keratin horn-like ankles, swollen and frequently splitting foot pad, and necrotic lesions of the epidermis that often split down the center of the lesion (Mayne, 2005). This disease is prevalent in broiler farms and has been reported in several countries. It poses a challenge to the modern poultry industry, as it is one of the most detrimental locomotor disorders affecting broiler welfare and a serious economic problem for broiler production (Szafranec et al., 2022). Pododermatitis also alters behavior and serves as a port of entry for pathogens, especially litter bacteria, which are in constant contact with the footpads. Many factors can contribute to the development of pododermatitis, including broiler feed, skin structure, body weight, sex, humidity, and litter type. However, wet bedding is the factor most likely to affect pododermatitis (Mayne, 2005).

Acetic acid is a well-established agent as an antiseptic, disinfectant, and food preservative, long recognized for its antimicrobial potential. Its use in controlling bacteria associated with pododermatitis in broiler chickens, whether on farms, in poultry slaughterhouses, or at chicken foot processing facilities, helps minimize the risk of infection for both poultry and consumers. To date, knowledge of broiler pododermatitis characteristics is limited. Therefore, the objective of this study is to fill this gap by investigating the lesion characteristics of pododermatitis in slaughtered broilers and determining the pathogenic bacteria present in these lesions and their sensitivity to acetic acid.

2. Materials e Methods

a. Ethical approval

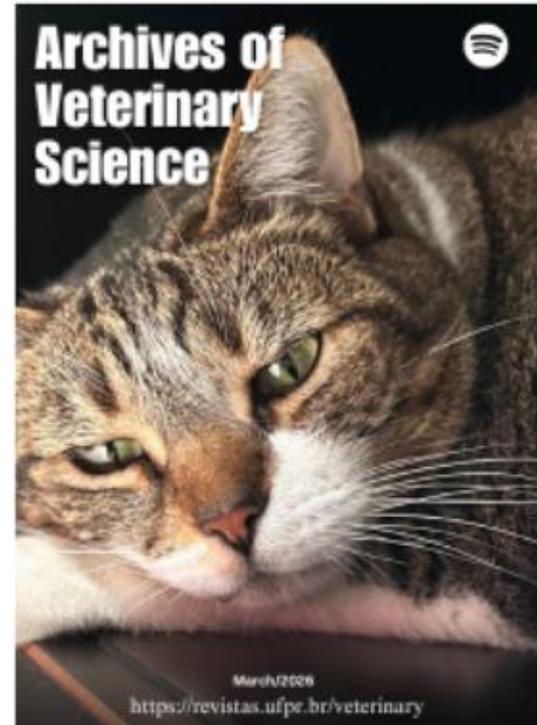
No ethical approval was obtained because this study did not involve laboratory animals and only involved non-invasive procedures.

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