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Retrospective Study in Bovine DNA Detection in Feedstuffs

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Animal feed is one of the most important environmental factors that has an impact on the quality and safety of animal products. Inefficient or uncontrolled animal care and management practices can be responsible for infections or poisonings in livestock that can be transmitted to humans. Bovine spongiform encephalopathy (BSE) is a severe neurodegenerative disease caused by prions. Because of the risk of BSE transmissibility, laboratory diagnosis is necessary to test cattle feed ingredients and ensure that feed does not contain bovine materials. Molecular biology methods have been used to identify bovine DNA in raw materials. These methods provide higher accuracy and reliability of results. This study aimed to present the findings of the detection of bovine DNA in ruminant feed samples from an animal nutrition company operating in the countryside of Sao Paulo State between 2020 to 2023. A total of 3,268 feedstuff samples from an animal nutrition company operating in the countryside of Sao Paulo state were analyzed between 2020 and 2023. The samples were submitted to DNA extraction using InstaGene™ Matrix. So, the real-time polymerase chain reaction (qPCR) method was performed to amplify the *Bos taurus* cytochrome B (*cyt B*) gene thereby identifying the presence of bovine DNA. As an internal positive control for the method, DNA extracted from bovine meat was used. From 2020 to 2023, the analysis showed that 13.4% (165/3268) of the samples tested positive for bovine DNA, comprising 2.8% (6/213) in 2020, 0.4% (2/454) in 2021, 3.0% (18/604) in 2022, and 8.2% (139/1697) in 2023. Although the presence of bovine DNA in the samples analyzed, choosing a sensitive method is important for the ruminant feed processing industry. This approach ensures rigorous control of raw materials and the prevention of potential cross-contamination within their facilities. Identifying animal species in ruminant feed is important for food safety, preventing cross-contamination, and controlling diseases such as BSE. Additionally, it ensures compliance with regulations, safeguards against fraud in the supply chain, and responds to ethical and transparency issues that are of importance to consumers.

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