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Detection of Swine DNA in Animal Feed

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Meat is a vital source of essential nutrients, including proteins, vitamins, and minerals, and plays an essential role for many carnivore diets. Consumer preferences, including religious demand (halal products), underscore the significance of authenticity, traceability, and availability of information in food, and label identification, particularly in pork products. The quality and safety of meat products can be influenced by several factors, including the animal\'s nutritional intake. In recent years, molecular methods have been employed as traceability tools, due to their sensitivity in detecting undeclared animal species, including swine DNA. This ensures that products including religious dietary requirements and consumer expectations regarding product transparency and authenticity. The aim of this study was to report the results of the occurrence of swine DNA in ruminants feed samples from an animal nutrition company operating in the countryside of Sao Paulo State from 2022 and 2023. A total of 256 samples of feedstuff were analyzed. Samples were submitted to DNA extraction using InstaGene™ Matrix. The real-time polymerase chain reaction (qPCR) method was performed to amplify the *Sus scrofa* cytochrome B (*cyt B*) gene to identify the presence of swine DNA. DNA extracted from pork meat was used as an internal positive control for the method. A comprehensive analysis conducted over the course of 2022 and 2023 revealed that 5.8% (5/256) of the samples tested positive for swine DNA, with 4.3% (2/46) in 2022 and 1.4% (3/210) in 2023. These findings suggest the potential for cross-contamination or the undisclosed presence of swine-derived ingredients in food products or animal feed. The detection of undeclared animal species in animal feed is important for ensuring compliance with food regulations, mitigating risks of cross-contamination, and ensuring transparency and product safety for consumers and industries. These findings can inform improvements in quality control processes and supply chain management, promoting safer and more ethical practices in food production. Foodomics is a recent term that has been introduced as a tool for improving transparency and safety for consumers, animals, and industry. Besides warranting the quality control process in the supply chain.

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