



LABORATORY TESTING OF ANIMAL MYCOTOXIN POISONING

I. Y. Sultanova

PhD. Veterinary Scientific Research Institute of Uzbekistan

Intizoryuldashevna@gmail.com

Abstract

The article presents methods of organoleptic and microscopic study of mycotoxins in feed and grain crops in laboratory conditions to ensure food safety when feeding animals and providing them with feed that meets veterinary and sanitary requirements

Introduction

Annotatsiya:

Maqolada hayvonlarni oziqlantirishda oziq ovqat xavfsizligini ta'minlash hamda veterinariya-sanitariya talablariga javob bera oladigan ozuqalar bilan ta'minlashda yem-xashaklar va donli ekinlarni tarkibida uchraydigan mikotoksinlarni laboratoriya sharoitida organoleptik, mikroskopik tekshirish usullari kiritilgan.

Аннотация:

В статье представлены методы органолептического и микроскопического исследования микотоксинов в кормовых и зерновых культурах в лабораторных условиях для обеспечения безопасности пищевых продуктов при кормлении животных и предоставления им кормов отвечающих ветеринарным и санитарным требованиям.

Relevance of the topic:

One of the current issues in ensuring the safety of food products for farm animals is the identification of mycotoxins found in the feed and grain products they consume. As is known, the creation of an abundant, nutritious and high-quality feed base in each livestock farm is a guarantee of obtaining high yields from livestock. Daily feeds given to animals should be rich in various nutrients, vitamins and minerals, meet the needs of the animal body, and not negatively affect their health, growth and development, as well as the quality of products. Because daily feeds given to animals primarily affect their productivity, fertility, health, growth and development.



Currently, more than 100,000 species of fungi are known, and their size ranges from a few microns to one meter. About 500 of their species are pathogenic for animals and humans, accounting for 6.0-7.0% of the world's population [1; 12-c., 6; 20-p.]. In each livestock farm, the body of animals raised should be enriched with a feed base rich in vitamins (CC, B6, B12, PP) and additional minerals such as phosphorus, cobalt, manganese, fluorine and potassium, in addition to daily vitamins [4; p. 216]. Mycotoxins are products of the vital activity of various pathogenic fungi and are considered dangerous poisons for farm animals, poultry, domestic animals, as well as humans. Mycotoxins are derived from the Greek words mukos - fungus, toxicon - poison, and are low-molecular toxins in the nature of secondary metabolites produced by microscopic mold fungi. Mycotoxicoses are a group of diseases resulting from poisoning with toxins of poisonous fungi. These diseases occur as a result of ingestion of mycotoxins through feed contaminated with mycotoxins - such as mixed fodder, grain products, hay, silage, haylage.

Failure to carry out the relevant technological processes, such as timely preparation, harvesting, transportation, storage of feeds intended for livestock, poultry and fur animals in accordance with the established procedures, that is, failure to comply with the relevant technological requirements, negatively affects their nutritional quality. By caring for plants using various chemicals intended for plant protection, and collecting fodder for livestock from them, or by improper storage of various feeds in unfavorable conditions, contamination with pesticides or mycotoxins leads to poisoning of animals. Currently, in a number of farms specializing in livestock, poultry, rabbit, and fish farming, which are important sectors of agriculture, improper storage of feed is causing a high incidence of mycotoxin poisoning in animals, leading to their unnecessary death due to diarrhea.

Materials and methods

In order to ensure the stability of the quality indicators of feeds available in farms specializing in livestock and fisheries, it is advisable to pay attention to the proper storage of all types of feeds in farm warehouses. Also, before using feed products produced for feeding livestock, poultry and rabbits or imported from compound feed enterprises, they must first be subjected to laboratory testing. Based on the results of laboratory testing of feeds intended for animals, a specialist gives instructions on the possibility of using the feed or its disposal. For this purpose, the Laboratory of



Toxicology and Therapy of the Veterinary Research Institute has established organoleptic, microscopic, mycological, and biological methods for testing animal feeds.

Organoleptic method: The quality of feeds was directly examined at agricultural farms. Grain crops, straw, hay, silage, and other grain feed products collected from farms were initially inspected and their storage conditions were studied, and then separate samples were selected as initial and intermediate samples for laboratory testing.

Appearance of samples: when inspected, the consistency, moisture, and dispersibility of the product were first examined. When examining feed products organoleptically, special attention is paid to their smell and color. For this, a white piece of paper is taken, 100 g of it is placed on it and examined. If the white paper is stained with a bluish color as shown in the picture, it is determined that the feed is moldy or moldy based on its color.

Microscopic method: When damaged areas or suspicious foci are found in the feed sample, fungal films are taken and a drop of physiological solution or water from the glass of the object is dripped onto the fungus and covered with a cover glass and viewed under a microscope. In this case, fungal spores can be seen under a microscope. For this, it is observed with a 10x40 objective.

Mycological method. For mycological examination of samples, they can be sown on appropriate nutrient media to determine which type of fungi caused the poisoning. Primary cultures are sown for primary isolation of fungi from flour and grain feeds. Usually, Chapek agar medium is used for primary cultures, and later Saburo media are used. In order to differentiate the types and varieties of fungi, special methods and technical methods of inoculation are used in each individual case. With this method, it is possible to accurately diagnose what kind of fungi are present in the feed and their differentiation, by sowing them on nutrient media and separating cultures from them.



Laboratory tests: In this case, the presence of aflatoxins, that is, in the composition of grains, feed, milk and dairy products, can be determined in various laboratory conditions. For this, HPLC (high-performance liquid chromatography), IFT (immunoenzyme analysis) are used. Chromatography is one of the most common and modern methods that allows you to determine the types of aflatoxins (B1, B2, G1, G2, M1) and their quantity. In IFT, strains are separated by aflatoxin types and help determine their types.

The importance of laboratory tests is that aflatoxins are carcinogenic substances that pose a serious threat not only to the animal body, but also to human life. Determining their concentration in feed is important for ensuring the safety of animal health and combating them.

Fungal species identification. In laboratory conditions, samples were taken from the affected areas of each cereal product and cultured on Chapek and Saburo media.

In conclusion, mycotoxins are one of the toxins that pose a serious threat not only to animal organisms but also to human life.

The fastest and most accurate diagnostic method for detecting mycotoxins is one of the modern chromatography methods and microscopic methods.

REFERENCES

1. Антаров В.Б., Медведова Т.В. “Всё о грибковых болезнях человека ” Санкт-Петербург. -2015. С -12.
2. Литусов Н.В. “Медитцинская микология” // Екатеринбург: УГМУ. 2022. С - 35.
3. Narkulov J. “Klinik laborator diagnostik” // Toshkent, -2007. 113-b.
4. Xaitov R.X., Eshimov D.E. “Hayvonlar patologik fiziologiyasi” // “ILM ZIYO”, Toshkent, -2013. 216 –b.
5. Шевченко А.А., Шевченко Л.В. Пищевые токсикоинфекции и токсикозы. Учебное пособие. – Краснодар, 2006. С-115.
6. Eshboyev Y.X., Ubaydullayev Z.X., Eshboyev S.Y. “Teri va tanosil kasalliklarning laborator tekshirish usullari” // Toshkent, -2018. 20-b.

