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Identification of *Aspergillus* spp.of Broiler Chickens Lungs for Sale in Market Ibuh, Payakumbuh City

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ABSTRACT

Food of animal origin can be considered suitable for consumption if it does not contain microorganisms, such as the fungus *Aspergillus* spp., Which can harm human health. This study aims to isolate and identify *Aspergillus* spp. In light broiler chickens at the ibuh market in the city of Payakumbuh. A total of 30 samples of light broiler chickens were taken at random from Ibuh Market, Payakumbuh City, West Sumatra. The samples were washed with sterile distilled water containing antibiotics and then implanted in a special medium with Sabouraud dextrose agar (SDA), then incubated at room temperature for 3-7 days. Growth morphology of *Aspergillus* spp. Observed macroscopically. Colonies suspected of belonging to the *Aspergillus* species were examined under a microscope. The findings were analyzed descriptively. The results showed that *Aspergillus* spp. 66.67% of positive lung samples were infected with *Aspergillus* spp. The results of the identification of *Aspergillus* spp. The samples that were positive were 2 samples (6.67%) *Aspergillus* Flavus, 12 samples (40%), *Aspergillus* Niger, 6 samples (20%) *Aspergillus* Fumigatus. The presence of *Aspergillus* spp. In broiler lungs, it can potentially cause aspergillosis not only in poultry, but also in humans, as it is zoonotic.

Keywords
Aspergillus spp .., broiler chickens, lungs, zoonoses.

Introduction

Food safety in government regulations 86 of 2019 is a condition and effort necessary to prevent possible contamination of food by biological, chemical and other objects that can disrupt, harm and endanger human health, and do not contradict religion, beliefs and culture. society, so that it is safe to consume. Food of animal origin can be considered fit for consumption if it does not contain microorganisms such as *Aspergillus* spp. which can damage human health. *Aspergillus* spp., It is a fungus that causes aspergillosis or mycotic pneumonia, brooder pneumonia, fungal pneumonia. Factors contributing to the spread of aspergillosis are pens with inadequate ventilation, dusty cages, cages with high humidity and relatively high temperatures, high ammonia levels, wet and damp litter, wet and moldy food, immunosuppressive diseases (especially humboro), and low heat temperatures during DOC maintenance [1]. Aspergillosis in poultry is mainly caused by *Aspergillus* fumigatus and Aspergillosis flavus. Другие организмы, которые могут вызывать аспергиллез, - это *Aspergillus* terreus, *Aspergillus* glaucus, *Aspergillus* nidulans, *Aspergillus* nigger, *Aspergillus* amstelodami и *Aspergillus* nigrescens [1] .
Chickens with aspergillosis do not respond to treatment, but prevention can be achieved by controlling or limiting the spread of the disease in the hen house by eliminating the source of infection and group treatment with fungistat preparations (mycostatin, calcium salt or propionate, or gentian violet) in food or Cuprisulfate (solution 1: 2000) or Rocon in water for 3-5 days. The manure can be lightly sprayed with a germicidal agent to control the spread of dust and air containing mold spores [2]. In Indonesia, poultry aspergillosis has been widely reported, especially in the lungs of birds. Aspergillosis was first reported in Indonesia in 1952 by Kraneveld and Jaenodin [3].
The broiler population in Payakumbuh was 2,815,000 in 2019, with a meat production of 3,061,829 kg and broiler consumption 26,877.23 tonnes [4]. Given the large number of requests from the surrounding population for the consumption of meat from broiler chickens, the isolation and identification of *Aspergillus* species in broiler chickens sold in the Ibuh, Payakumbuh market is being met.

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Methods

Material

Materials used in this study were Sabouraud Dextrose Agar (SDA), sterile distilled water containing the antiseptic ampicillin (0.1 cc / 100 ml), lactophenol cotton blue (LCB), cloth, mask, 70% alcohol, toothpicks, samples plastic., Aluminum foil, wrapping paper, label paper, cotton wool, agar powder and light broiler samples.

Sample

October to December 2020. Samples of light broiler chickens were taken from the Ibuh market, Payakumbuh city. The study was carried out in the Laboratory of Animal Diseases and Health of the Agricultural Polytechnic of Payakumbuh. The sampling of light broiler chickens was carried out in the morning at Pasar Ibuh, the city of Payakumbuh. Lung samples were taken under aseptic conditions from up to 30 light broiler samples from 6 traders, each of which was taken up to 5 samples, placed in sterile plastic, and then each sample was numbered.

Isolation of *Aspergillus* spp.

Samples were taken under aseptic conditions and placed in sterile Petri dishes using sterile scissors and tweezers, the lungs were cut to a size of approximately 1 cm, the pieces of the lung were washed 3 times with sterile distilled water containing tetracycline antibiotics (0.1 cm3 / 100 ml), then each piece of organ was implanted on the surface of the SDA medium and incubated at room temperature for 1-2 weeks. On the second day and beyond, the culture was observed for the growth of fungal colonies macroscopically, looking at the shape, color, bottom surface and edges of the colony. If a colony of *Aspergillus* spp. Microscopic examination is carried out using a glass slide.

Identification of *Aspergillus* spp.

Identify fungi suspected to be *Aspergillus* spp. then carried out inoculation on glass slides. Culture sections were prepared by placing a sterile pipette on the bottom of the Petri dish, then placing a cotton swab moistened with sterile distilled water on the Petri dish so that the atmosphere inside the Petri dish was humid. In addition, the glass object is placed on top of the pipette, the SDA is cut to a size of 1x1 cm and placed on top of the glass object. The SDA pieces were then smeared with fungal culture on four sides using a sterile loop. Cover the incision with a glass lid. Then the Petri dishes were closed again. The cultures were incubated at room temperature for 2-7 days. Under a microscope, the growth of colonies was observed against the background of the growth of septa of hyphae, conidia, conidiospores, and phialids of the fungus. Subsequently, the colonies were stained by dropping LCB onto the edges of the coverslip and identified under a microscope at 400x magnification.

Results

Based on Table 1, it can be seen that of the 30 samples tested, there were *Aspergillus* spp. 20 samples (66.67%) and only 10 samples (33.33%) were not found *Aspergillus* spp. seen from the macroscopic test. According to the results of the identification of *Aspergillus* spp. The samples that were found positive were 2 samples (6.67%) *Aspergillus Flavus*, 12 samples (40%) *Aspergillus Niger*, 6 samples (20%) *Aspergillus Fumigatus*.

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Table 1. Frequency and prevalence of *Aspergillus* spp. In the lungs of broiler chickens sold in Market Ibuh, Payakumbuh City

Location Sample	*Aspergillus* spp.	Jumlah (n=30)	
		Positif	Negatif
Peternakan 1	*Aspergillus Niger*	2	2
	Aspergillus Fumigatus	1	
Peternakan 2	*Aspergillus Niger*	2	1
	Aspergillus Fumigatus	2	
Peternakan 3	*Aspergillus Flavus*	1	2
	Aspergillus Niger	1	
	Aspergillus Fumigatus	1	
Peternakan 4	*Aspergillus Flavus*	1	0
	Aspergillus Niger	3	
	Aspergillus Fumigatus	1	
Peternakan 5	*Aspergillus Fumigatus*	1	4
Peternakan 6	*Aspergillus Niger*	2	1
	Aspergillus Fumigatus	2	
		20 (66,67%)	10 (33,33%)

Discussions

Based on the results of a study carried out on 30 samples of light broiler chickens, they show that the lungs of broiler chickens sold in Pasar Ibuh, Payakumbuh city, are mainly contaminated with *Aspergillus* spp. with a percentage of 66.67% (20 samples). This identification is visible from the results of macroscopic and microscopic examinations. *Aspergillus* spp. It is a fungus that is commonly found in a variety of habitats, but is commonly saprophytic in soil, feed and stored food. *Aspergillus* also frequently contaminates grain, nuts and their processed products [5]. *Aspergillus* flavus is a fungus that has white colonies at a young age and turns yellowish green after conidia formation. The head of conidia is from yellowish-green to dark greenish-yellowish, rounded, conidiophores with rough walls, hyaline [6]. *Aspergillus* fumigatus has elongated upper conidia (columnar), has a dirty green color, vesicles are cupped, smooth conidiophores are usually green, glucose conidia and echinulata are green. Aspergilllus fumigatus can grow at 37 ° C and even up to 50 ° C [7].
The FAO (Foood Agriculture Organization) maximum concentration of aflatoxins in all foods is 30 parts per billion (parts per billion). Several countries have set limits on the permissible concentration of aflatoxins in agricultural commodities, animal feed and food. The US provides a maximum aflatoxin concentration limit of 20 ppb for all foods, Canada 15 ppb, India 30 ppb, the Philippines 20 ppb, Australia 15 ppb, and the UK 4 ppb [8], while Indonesia sets 20 ppb for AFB1 and total aflatoxin 35 ppb [9]. People can also become infected with aflatoxins by eating food contaminated with the toxin resulting from the growth of this fungus. Therefore, food safety surveillance of animal products, which is the role of veterinarians and paramedics, must be considered for the well-being of humans.

Conclusion

Based on the isolation and identification of *Aspergillus* species in light broiler chickens sold in Pasar Ibuh, Payakumbuh town. Samples of the lungs of broilers were infected with *Aspergillus* spp. with a percentage of 70%, including *Aspergillus* Flavus with a percentage of 13.33%, *Aspergillus* Niger with a percentage of 40% and *Aspergillus* fumigatus with a percentage of 26.67%. The presence of *Aspergillus* spp. In the lungs of broiler chickens, it can potentially cause aspergillosis not only in poultry, but also in humans, as it is zoonotic.

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