

Identification Of Mold Contaminan In Expired Wet Bread In Tulung Agung

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ABSTRACT

Bread is a carbohydrate source that is considered very practical for today's fast-paced and practical life. Mold is one of the microorganisms that cause disease in humans. Mold is the main microorganism that plays an important role in the process of making and spoiling bread. Fungi that are often found in bread spoilage are *Rhizopus stolonifer*, *Penicillium sp.*, and *Aspergillus sp.* This study used a descriptive research design. The purpose of this study was to determine the presence of mold on wet bread that is no longer suitable for consumption in Tulungagung Regency. The population in this study was bread sold in Tulungagung Regency. The samples of this study were 4 types of bread that are often sold in Tulungagung Regency. pandan brown bread samples contained *Aspergillus sp.* and *Rhizopus sp.* fungal species, banana bread samples contained *Aspergillus sp.* and *Rhizopus sp.* fungal species, steamed bread samples contained *Aspergillus sp.* and *Rhizopus sp.* fungal species, and putu ayu bread samples contained *Aspergillus sp.* and *Rhizopus sp.* fungal species. The conclusion of this research was that the fungal species of *Rizhoppus sp.* and *Aspergillus sp.* were found. This shows that bread that is not suitable for consumption can cause health problems for consumers.

Keywords: Bread, mold, *Aspergillus sp.*, *Rhizopus sp.*, Identification

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INTRODUCTION

Tulungagung Regency is a lowland area where the majority of residents earn their living as farmers. Apart from being farmers, the livelihoods of the people of Tulungagung are very diverse, ranging from factory workers, fishermen, farmers, livestock breeders, bread or cake trading businesses and home bread factories. There is quite a lot of competition from companies operating in the culinary sector, therefore companies must pay more attention to the quality of food products for consumers. Product quality is one of the determining factors in the level of consumer satisfaction after purchasing and using a product. One of them is food products. Food is anything that

comes from biological sources and water, whether processed or not. As a basic need, food is a human right of every Indonesian people, so it must always be available in sufficient quantity at all times, safe, high quality, nutritious and varied at prices that are affordable for people's purchasing power. In the process of preparing, processing and making food or drinks, a food system is needed that provides protection for food producers and consumers, and does not conflict with public beliefs. To achieve this goal, the government has made various efforts through regulation, guidance and supervision of food (Directorate of Pharmaceutical Production and Distribution Development, 2011). One of the food products whose quality must be paid attention to is bread,

because bread is widely consumed by the public.

Bread is a snack source of carbohydrates which is considered very practical for today's fast-paced and practical life. Delicious and varied flavors, unique shapes without reducing the nutritional content are the main reasons why bread is the main choice in the daily menu (Hasanah, 2017). The basic ingredient for making bread is flour. Bread tends to have a short shelf life because the main ingredient generally used to make bread is wheat flour. Wheat flour contains gluten, which is a protein that can provide structure to bread. Protein is a good growth medium for microorganisms, such as fungi. Especially if it is open, bread will mold more easily because there are molds in the air that produce spores. These spores will spread and will start to grow under the right conditions, such as warm enough temperatures and high humidity (Axel, et al., 2017).

Fungi are one of the microorganisms that cause disease in humans. Fungi are living creatures that grow side by side with human life, both in the air, soil, water, clothes, and even on the human body itself. Fungi can cause quite serious illnesses in humans. One of the diseases caused by fungi comes from food (Hasanah, 2017).

Mold growth can cause physical and chemical changes, such as changes in color, texture, aroma and taste. Something to be wary of is the formation of mitotoxins during the storage process which can contaminate food and cause poisoning in humans (Lestari, et al., 2019). Mold is the main microorganism that plays an important role in the

process of making and spoiling bread. Several types of fungi that are often found in rotting bread are *Rhizopus stolonifer*, *Penicillium s*, and *Aspergillus sp* (Syaifuddin, 2017).

Aspergillus is a eukaryotic organism that has the most widespread distribution in nature. Apart from that, this type of mold is also a common contaminant on various substrates in tropical and subtropical areas (Dina, 2016). *Aspergillus sp* fungus can produce several mitotoxins, one of which is aflatoxin. Aflatoxins are a class of mitotoxin compounds, namely toxins originating from fungi which are carcinogenic to humans and animals. The high content of aflatoxin in food can cause poisoning.

Research by Tiyas (2023) stated that there was a type of *Rhizoppos sp* fungus in chocolate banan bread around Bojonegoro University. In research, Djasfar (2022) said that there were fungi of the type *Rhizoppos sp*, *Aspergillus sp*, and *Pennicilium sp* in bread sold at Rawa Buaya Market. Some people don't really pay attention to the appearance of the bread they eat. Made from flour and starch, bread is easily contaminated by microbes. Apart from that, storage areas with high humidity and lack of sterility can also result in food being easily contaminated with microbes. This usually happens at the beginning of the expiration date of bread, not knowing the characteristics of mold growth on bread that is no longer suitable for consumption. This habit is often carried out and the impact will cause many diseases for consumers. This habit should not be allowed to continue. Until it results in negative impacts in the future (Yolanda, 2016).

METHODS (FOR ORIGINAL RESEARCH ARTICLE ONLY)

The materials used in this research were potatoes 200 gr, dextrose 20 gr, agar 15 gr, aquades 1 liter, knives, cutting boards, hot plates, analytical scales, erlenmeyer, 70% alcohol, cotton, glass object, Bunsen, round glass, cover glass, microscope.

RESULTS AND DISCUSSION (REVIEW ARTICLE USE DISCUSSION)

The research results used 4 samples with different bread. Bread samples were obtained from shops in Tulunagagung with different types. The results of macroscopic observations of the Rhizopus Stolonifer fungus produce white colonies and black spores, microscopic observations of the Rhizopus Stolonifer fungus have single sporaniphores and round shaped spores.

No	Sampel roti basah	Spesies jamur	
		<i>Aspergillus sp</i>	<i>Rhizopus sp</i>
1	Roti coklat pandan	✓	✓
2	Roti pisang	✓	✓
3	Roti kukus	✓	✓
4	Roti putu ayu	✓	✓

(Source: Data Pinilis, 2023)

From table 1 it shows that the pandan chocolate bread samples contained *Aspergillus sp* and *Rhizopus sp* fungal species, in the banana bread samples there were *Aspergillus sp* and *Rhizopus sp* fungal species, in the steamed bread samples there were *Aspergillus sp* and *Rhizopus sp* fungal species, and in the bread samples Putu Ayu

contains *Aspergillus sp* and *Rhizopus sp*. This research was conducted to identify mold found on bread that is no longer suitable for consumption in Tulungagung Regency. From the research, 4 samples of bread of different types were taken which are usually sold in shops and markets.

Based on the results of the research carried out, it is suspected that there are two different types of fungal species in each sample, namely *Rhizopus Sp* and *Aspergillus Sp*. It is necessary to identify them microscopically to confirm the species of fungus growing. Macroscopic observations need to be carried out with confirmation tests by planting bread samples on selective agar media. The media used for the confirmation test are PDA media (Potato Dextrose Agar) and SDA media (Sabouraud Dextrose Agar).

Planting bread samples on PDA media was carried out because PDA media is one of the media that is often used for isolating mold types of fungi. According to research, one of the good media to use for fungal growth is PDA (Potato Dextrose Agar) media because it contains quite a lot of carbohydrates, consisting of 20% potato extract and 2% glucose, thereby speeding up the pigmentation and sporulation processes in fungi. Fungi grew more on PDA media compared to NA and CDA media. Potato dextrose agar (PDA) has a pH of 4.5 to 5.5 so it inhibits the growth of bacteria which require a neutral environment with a pH of 7.0 and an optimum temperature for growth between 25-30°C (Pinky, 2015).

DA media (Sabouraud Dextrose Agar) is a medium used to isolate fungi. The composition of the SDA media is Mycological peptone 10 g, Glucose 40 g, and Agar 15 g. Mycological peptone

functions to provide nitrogen and a source of vitamins needed for the growth of microorganisms in SDA media, glucose as an energy source and to function as a solidifying agent. Then the mushrooms were incubated at 37 degrees Celsius in an incubator for 2 days.

CONCLUSION

Based on the results of research that has been carried out, it was found that the fungal species *Rizhoppus* sp and *Aspergillus* sp. This shows that bread that is no longer suitable for consumption can cause health problems for consumers. So it is necessary to identify mold on bread to determine the quality of bread marketed in Tulungagung Regency and the importance of maintaining the quality of the bread produced. Suggestions for future researchers are to develop research that not only examines mold on bread, but also on foods that are susceptible to mold growth

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