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RESEARCH ARTICLE

ASSESSMENT OF EFFECT OF MOISTURE AND LIGHT ON MOLD GROWTH

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ABSTRACT

Bread is one of the oldest prepared foods. It is a staple food prepared from a dough of flour and water, usually by baking. Throughout recorded history it has been popular around the world and is one of the oldest artificial foods, having been of importance since the dawn of agriculture. Bread is a staple of many diets throughout the world, from thriving metropolises to developing nations. Mold is ugly fungi, something no one wants to eat. No matter how many preservatives are in it, all bread will eventually mold. Bread spoiled by many molds, of which *Penicillium* species are by far the most common Natural product market growth very fast in the last few years . It has now been observed that many of the constituents present in the drug may be affected by humidity and light, raising the serious concern about the stability of such formulations may cause damage of the drug. Our hypothesis is that humidity and light are all bad for bread but great for fungi or mold, in other side by keeping the bread in a cool and dark place, it will last longer and stay fresh. So in this article we will show how far this hypothesis is correct using white bread as example.

INTRODUCTION

We've all seen it. Black, blue, or green fuzz growing on the top of the bread you put in your cupboard a few days ago. That fuzz is mold. Mold is a member of the fungi family, which is a separate categorization from plants and animals. Possibly the most well-known member of the fungi family is mushrooms. Fungi is defined as a plant without chlorophyll, which means it cannot get energy directly from the sun as other plants can. This means that fungi must use other plants and animals as its food source. Although mold can grow on many types of foods, mold on bread is common because bread provides a very desirable source of nutrients for mold. It's often kept in a warm area of your home – a cupboard or breadbox rather than the refrigerator. It's moist. And mold likes the ingredients in bread. Although you cannot see them, there are millions of mold spores in the air around you. These spores then settle on the bread in your cupboard and start to multiply. Mold on bread reproduces as long as there is a food source. Sometimes mold reproduces very rapidly – mold can sometimes double in size in an hour.While mold will grow better in a warm environment, it can grow in cooler temperatures such as your refrigerator as well, which means you cannot avoid moldy bread simply by putting it in your refrigerator (Testing, 2017).

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The impact of microbial and fungal growth not only on food items but also on herbal drugs and other important things is a matter of concern (Anon, 2017). The better we understand the various factors that effect the growth of fungus and other micro-organisms we will be able to better prepare ourselves and take preventive steps to avoid spoilage.

MATERIALS AND METHODS

Sample Preparation

For the current experiment we took white bread as the source of assessment for our activity. White bread was purchased from the local market and the required quantity of bread slices were taken and placed on a sterile platform. Then we placed the bread slices in zip lock bags after water drops were placed on them. The duration of the experiment lasted for 10 days and observations we made in between to ensure the set up was alright and mold growth was happening or not.

Design of Experimental setup

The bread slices were placed in zip lock bags as shown in the Figure (1). The bread slices shown in this Figure (1).are those kept in light source and the picture was taken on 5th day of the experiment. The total duration of the experiment was 10 days and this period was considered ample for mold growth (Anon, 2017).

The white bread that was purchased from the market was arranged in the following manner

S.no	Assessment	Condition	2 Drops	4 Drops	6 Drops
1.	Effect of moisture and light on microbial and fungal growth.	Inside in dark environment	a 8 Drops	b 10 Drops	c 12 Drops
2.		Outside in light, well lit environment	d	e	f

Figure 1.

Figure 2.

Figure 3.

This experimental design is effective in establishing the effect of moisture and light/dark environment on the growth of molds in bread or any other source that can support the growth of fungi or microbes.

Initiation of Microbial Growth: In order to initiation the growth of micro-organisms or fungi on the source that is the bread we can leave them alone also but since we in this experiment wanted to check the effect of moisture we decided to add few drops of water using a dropper. As mentioned in the table above we added 2, 4, 6,8,10 and 12 drops of water respectively on 6 bread slices (Anon, 2017). The aim of this method was to check how the varying degrees of moisture content will impact or effect the growth of molds or microbes on the nutrition source (bread slices).

Observations

From the Figures above we can make the following assessments. If we see in Figures 2 and 3 we find that lack of moisture has enable the delay in the development of mold growth in comparison with that of the other bread slices which have moisture. We don't claim that molds won't grown on the control because if given a chance and more time they too might develop mold (Liu, 2011). In the Figures 4 and 5 we see there is no visible growth of mold but in figure 6 there is clear growth of bacteria. In figures 7,8and 9 we find that as the moisture content is increasing the spread of the mold also increases.

Figure 4.

Figure 5.

Figure 6.

Figure 7.

Figure 8.

Figure 9.

RESULTS

We find that from this experiment that the effect of moisture and light does play an important role in the growth of molds on bread. We notice that light decreases the intensity and extent of fungal spread and the more the moisture the more is the spread of the mold growth. The results are an evidence that moisture and light if controlled and managed helps us to contrail and limit the growth of molds. Bread is a staple of many diets throughout the world, from thriving metropolises to developing nations. Mold is ugly fungi, something no one wants to eat. No matter how many preservatives are in it, all bread will eventually mold. Bread spoiled by many molds, of which *Penicillium* species are by far the most common Natural product market growth very fast in the last few years . It has now been observed that many of the constituents present in the drug may be affected by humidity and light, raising the serious concern about the stability of such formulations may cause damage of the drug.

Conclusion

From this experiment we have proved that there is a direct link between the extent and intensity of mold growth based on the amount of moisture and presence or absence of light in the influencing environment around the bread slice.

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