Biology Investigation folio

Student’s Name

Institution

Date

Introduction

Materials and Methods

**What is within the yeast that makes the dough rise?**

There are two types of ways that yeast releases its energy in doughs. The supply of no oxygen and with oxygen. With the use of oxygen, the yeast makes carbon dioxide (CO2 - a gas). However, most energy used comes from sugar in order to make lots of air, known as respiration. Furthermore, with no use of oxygen the yeast produces alcohol and carbon dioxide after the use of energy from sugar, known as fermentation. Moreover, using yeast in baking bread, both respiration and fermentation processes are undergone. so that gas is produced and trapped in the dough to create an airy and light bread.

**What is the type of yeast used in a dough to create a light and airy bread?**

Active dry yeast is highly recommended to be used in bread doughs as it only requires warm water to activate the little organisms in it, in order to create an airy bread.

*What factors are most important in producing light and airy bread?*

**Does temperature affect yeast?**

Yes, temperature does affect yeast, yeast best grows at the temperature of 30oC and 35oC. However, at low temperature the yeast slows down, and high temperature yeast enzymes won’t work well.

**What type of flour is most suitable for light and airy bread?**

Flour with less amount of protein is best suitable in baking bread. However, there is a type of flour called All-purpose flour (AP), it is great in producing a lighter and fluffier bread. The less amount of protein in flour the lighter and airy the bread would become, because if a lot of protein is added then the dough would become hard.

**What temperature should the dough of the bread be at?**

The temperature that is required for the dough of the bread is between 30oC and 35oC. Hence, in order for the yeast in the dough to grow, it is important to cover the bowl of dough with a damp towel or a plastic wrap. Thus, it should be placed in an area where it is warm for around 1 to 2 hours, so that the yeast will grow and double the size of the dough.

**Why is gluten important in the use of baking bread?**

Gluten proteins are a very important protein groups used in baking dough. When flour and water is added together and is mixed, a set of proteins is formed, allowing the dough to be elasticity. However, by holding the carbon dioxide during fermentation, the proteins formed allows the bread to rise. This will then allow the bread to easily form bubbles inside forming an airy dough.

**How does salt function in the bread dough?**

Salt helps in many ways in a bread dough, small amounts of salt help the function of yeast to flow probably to allow the bread dough to rise with air inside it and also plays a role in constricting the gluten structure. Although, the salt helps in holding the formation of the carbon dioxide gas in fermentation, it slows down enzyme activity and fermentation in the dough.

Amount of flour

Salt

Temperature

Quantity of yeast

Quantity of water

Type of flour

Time

Gluten

**Factors in producing light and airy bread**

**Discussion**

The result of the experiment indicates that there is a correlation between the mass of the yeast and the height of the dough mixture. In the graph 1 above “height of dough mixtures” the result shows that the mass increases the height of the dough mixtures increases as well. The result also indicates that height of the dough mixtures also increases after every five minutes (5mins). This therefore, confirmed the activities of the enzymes at various temperatures. According to McCain (2015), enzymes are very sensitive to change in temperature and it functions or catalyzes a process different under different temperature condition. Based on the fact that the height of the dough increases reflects the metabolism rate, which occur at various temperature. And based on the graph 1 and 2 above, it is evident that when the bread dough is exposure to high temperature, the yeast activities will automatically increase. The graph 1, 2 and 3 from the result indicates that the mass is directly related to the height of the dough bread. When the mass increases, the height of the dough bread increases as well. It means that the increase in mass trigger metabolic reaction and the higher the mass the higher the rate of metabolic reaction. As stated by McCain (2015), the metabolic reaction occurs between the enzyme and the temperature. This therefore, would allow the light and airy to occur in bread dough.

From the graphs 1, 2 and 3, it is evident that the rate of metabolism reaction in dough bread increases as the temperature increases. The fact that the increase in mass increases the height of the reaction; it is means that there is the relationship between the mass and the height. This therefore, means that the result of the experiment supports the hypothesis which was being tested. It could be concluded that the activity of the yeast increases when the dough of bread is placed in high temperature. It is also important to note that the yeast dough should remain viable for the purpose of production of carbon dioxide and also for it to be retained. The increase is by 1.0gms due to the fact the yeast produce carbon dioxide during metabolism of starch molecules and sugar. As stated by McCain (2015), during metabolism, energy is produced, which increases the temperature of the reaction. And therefore, the high the mass of the yeast, the high the energy produced during the reaction and therefore, it increases the height of the reactions.