
EXPERIMENT 10 BAKING OF BISCUITS

Structure

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10.1 INTRODUCTION

Baking is an important process but is very complex. The baking test is the most important and the ultimate parameter to predict the flour quality and its suitability for biscuit preparation. Flour performance may be evaluated by a standard test baking procedure which is done under controlled conditions. By carrying out test baking, the process can be optimized and also the effect of different treatments on the quality characteristics of biscuits can be known.

The unit operations involved in the preparation of biscuits are mixing, sheeting, shaping, baking, cooling and wrapping. After cooling, biscuits are evaluated.

Objective

After performing this experiment, you should be able to:

- Carry out the test baking of biscuits and assess the quality of biscuits.
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10.2 EXPERIMENT

10.2.1 Principle

Four major changes associated with baking are

- a) Development of open, porous or flaky texture in biscuits because of reduction in product density.
- b) Change of shape – Shrinkage or spread and increase in thickness of biscuits.
- c) A reduction in moisture level of biscuits.
- d) Surface colouration – development of golden brown colour in biscuits.

10.2.2 Requirements

- Balance (least count 0.01g)
- Baking oven
- Hobart mixer (500g capacity)
- Sheeting platform

- Sheeting frame of thickness 3.5 mm
- Rolling pin
- Circular cutter of diameter 45 mm
- Docking pin
- Plastic bowls
- Spatulas
- Glass Beakers (100 ml)
- Flat knife
- Baking trays
- Refined wheat flour (maida)
- Sugar powder
- Salt (sodium chloride)
- Fat (Marvo, bakery shortening)
- Skimmed milk powder
- Dextrose
- Ammonium Bicarbonate
- Sodium Bicarbonate
- Vanilla flavour
- Water

10.2.3 Procedure

- Sieve the flour before use
- Set the baking oven at 200°C
- Weigh all the ingredients separately and accurately.

The biscuits are prepared using two flour samples 1 & 2 with the following formulation and method:

	Quantity (g)	
	Flour 1*	Flour 2**
Flour	300	300
Sugar powder	90	90
Fat (Marvo)	60	60
Skimmed milk powder	6	6
Dextrose	6	6
Salt	3	3
Ammonium bicarbonate	3	3
Sodium bicarbonate	1.5	1.5
Vanilla flavour (ml)	0.6	0.6
Water (ml)	54	63

Flour 1* Good quality flour

Flour 2** Poor quality flour

10.2.4 Observations

Evaluate the biscuits using the following format:

Quality characteristics of biscuits								
Sl. No.	Sample No.	Colour	Surface character	Crumb colour	Texture	Taste	Mouth feel	Over all quality
1.								
2.								
3.								
4.								
5.								
6.								
Quality Description	Colour	Surface character	Crumb colour	Texture	Taste	Mouthfeel	Over all quality	
Desirable	- Golden brown - University in colour	- Smooth - Yellowish white	- Creamy white	Crisp	- Pleasant to mouth - Normal	Easy Break don	Very Good Good Fair Satisfactory	
Undesirable	- Brownish - Whitish - Non-	- Rough	- Whitish - Dark brown	- Hard - Brittle - Grittiness	- Off Flavour - Off taste Dislikeness	- Residual taste - Formation of dough lump in mouth	Poor Very poor	

Method

1. Cream sugar powder, fat, skimmed milk powder, dextrose and flavour at 1st speed for 1 min, 2nd speed for 1 min and 3rd speed for 4 min using a flat blade.
2. Dissolve salt, ammonium bicarbonate, sodium bicarbonate separately in part of water and add to the cream and mix again at 1st speed for 1 min, 2nd speed for 1 min and 3rd speed 5 min.
3. Add flour and mix for 2 min in 1st speed.
4. Sheet the dough to 3.5 mm thickness and cut into round shape using the cutter and transfer the dough pieces to baking tray leaving two inches gap in between the dough pieces and dock the biscuits dough.
5. Bake at 200°C for 9-10 min.
6. Cool thoroughly and evaluate

10.2.4 Observations

Evaluate the biscuits using the following format

10.2.5 Results

Different flours can be evaluated for their suitability for making biscuits. Biscuits with golden brown colour smooth surface, creamy white crumb colour, crisp texture pleasant mouthfeel and taste are related as very good.

Quality characteristics of biscuits

Sample No.	Colour	Surface character	Crumb colour	Texture	Taste	Mouth feel	Over all quality
Flour 1*	Golden brown	Smooth	Creamy white	Crisp	Pleasant to mouth	Easy break down	Very Good
Flour 2**	Brownish	Rough	Dark brown	Hard	Off taste	Doughy lump in mouth	Poor

1* - Good quality flour, ** 2 - Poor quality flour

We can see from the results above, that sample No. 1 is a good quality flour and is suitable for biscuit making.

10.3 PRECAUTIONS

- Put on the oven well in advance so that when you place the baking tray, the oven is already at 200°C.
- Weigh the ingredients accurately.
- Dissolve the salts completely to avoid brown specks on biscuits.
- Follow the mixing conditions (speed and duration) properly.
- Sheet the dough to a uniform thickness.
- Transfer the circular dough pieces by gently lifting without causing distortion of shape.
- Cooling thoroughly is very important.
- Packing immediately after cooling to avoid loss of crispness.