
EXPERIMENT 19 JUDGING OF MILK POWDERS

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19.1 INTRODUCTION

A large portion of surplus milk during flush season is converted into milk powders, such as whole milk powder (WMP), skim milk powder (SMP) and dairy whiteners. WMP and SMP are normally used after reconstitution for various purposes particularly during lean season. Dairy whitener is used for whitening tea and coffee. The powder is stored at room temperature till use. Sensory evaluation of powder has great significance to assess the physical changes that have taken place during production and storage of powder and their effect on the end use.

19.2 OBJECTIVES

- 1 To learn the method of judging and grading of milk powders in dry and reconstituted form; and
- 1 To acquaint with the desirable and undesirable sensory characteristics of powders.

19.3 EXPERIMENT

i. Principle

The general principle involved in judging milk powders is same as discussed earlier for milk. The specific principle in judging powder is that these are judged in dry form as well as in reconstituted form. For judging the sensory quality of dairy whitener, it is added to tea/ coffee in addition to judging in reconstituted form. Therefore, it is highly important that powder is reconstituted properly.

ii. Requirements

- i) Score card and scoring guide.
- ii) Petri dishes

- iii) Spoon
- iv) Glass stoppered bottles
- v) Electric blender with a jar
- vi) Thermometer

iii. Procedure

- i) Start judging of a package of milk powder by examining it for neatness, attractiveness, proper sealing and printing.
- ii) Open the package and inhale the smell for aroma.
- iii) Transfer small amount (about 50 gms) in a Petri dish for judging in dry form.
- iv) Accurately weigh required amount (13 gms for WMP and 10 gms for SMP and dairy whitener) in a beaker. Slowly add warm water (45°C) to this powder and blend for 90 seconds with an electric blender (speed about 100 rpm). After blending transfer the reconstituted milk in a glass stoppered bottle. Hold for about 30 minutes before judging.
- v) Observe the dry powder for evenness of colour and free flowing property. Particularly observe the presence of cakes in SMP and lumps in WMP, which are undesirable attributes.
- vi) Judge the flavour of reconstituted milk adopting same method as explained for normal milk (Exercise No.11).
- vii) Then examine for the extent of sediment, undissolved particles, extraneous particles, partially churned fat or any other abnormality in the reconstituted milk.
- viii) Try to correlate the flavour of dried form with that of reconstituted form
- ix) Rinse your mouth with tap water.

iv. Observations

Record score of all attributes of each sample in the score card (Table 19.1) against the maximum score. Tick mark against the defect, if any, in the relevant row under the corresponding sample. Refer to the suggested scoring guide (Table 9b) for allotting score based on the intensity of the defect.

v. Results

Make total of the score of all attributes for each sample and grade on the basis of scale given for milk.

19.4 PRECAUTIONS

Adopt same precautions for judging of powders as described for milk (i-iv). In addition, reconstitute the powder properly and hold for at least 30 min before judging the reconstituted powder so that proteins are completely hydrated.

Table 19.1: Score Card Milk Powders

Scoring Instructions: Please write the score under each sample in the appropriate space. Refer to the scoring guide for allotting the score based on the type and intensity of defect. Indicate the defect, if any, by tick mark opposite the listed defects corresponding to the sample number. Total the score of each sample and grade on the basis of scale suggested for milk.

ATTRIBUTES	Defect	Sample Number				
		1	2	3	4	5
FLAVOUR (Max Score 65)						
(Dried and reconstituted product)	Score					
Normal sample ³ 59	Stale					
	Scorched					
	Metallic					
	Neutralizer					
	Oxidized					
	Rancid					
	Chalky					
	Astringent					
	Salty					
	Foreign					
	Unclean					
Appearance of dry Product						
(MAX. SCORE 15)	Score					
Normal sample ³ 13	Caked					
	Lumpy					
	Burnt particles					
	Brown colour					
Appearance of Reconstituted Product						
(MAX SCORE 15)	Score					
Normal sample ³ 13	Churned particles					
	Dark particles					
	Sediment/ undissolved particles or lumps					
	Scum at surface					
	Grainy consistency					
PACKAGE (MAX SCORE 5)						
	Defective					
	Soiled					
TOTAL SCORE FOR EACH SAMPLE						

Table 19.2 : Scoring Guide for Milk Powders

Attributes	Class of Defects	Suggested score		
		Slight	Definite	Pronounced
Flavour	i) Chalky, astringent, powdery/ burnt/ scorched, astringent	58	51	41
	ii) Metallic, oxidized, salty	57	49	39
	iii) Rancid, neutralizer, unclean, foreign	55	47	35
Appearance of Dry product	i) Lumpy, brown colour	12	10	8
	ii) Caky, dark/ burnt particles	12	9	5
Appearance of reconstituted product	i) Sediment/ undissolved, lumps, scum at surface	12	10	8
	ii) Dark/ churned particles, grainy consistency	12	9	5
Package	i) Defective	4	3	1
	ii) Soiled	4	3	2