
EXPERIMENT 2 PRESERVATION OF SHELL EGGS

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2.1 OBJECTIVES

After doing this exercise, you will be able to:

- preserve eggs for domestic and commercial use;
- evaluate the quality of preserved eggs; and
- differentiate between the qualities of preserved eggs and eggs without any preservation treatment.

2.2 INTRODUCTION

There are many factors affecting deterioration of shell eggs like temperature, humidity, sanitation and duration of storage. Eggs are to be maintained in a fresh condition as far as possible. Loss of water and CO₂ from shell pores result in decrease in weight of the eggs, increase in size of air cell and pH.

Eggs can be preserved by refrigeration, shell treatment by (spraying mineral oil) and thermo stabilization. Washing of eggs with detergent and sanitizers, by over wrapping also preserve eggs. You have studied about all the preservation techniques applicable for eggs in Unit 3 of this course under the heading of egg handling, grading, preservation, packaging and storage. Here you will learn how to preserve eggs for domestic and commercial use.

2.3 EXPERIMENT

2.3.1 Requirement

Commercial methods

- 1) Refrigerated room/refrigerator
- 2) Egg washing room
- 3) Sanitizer (sodium hypochlorite 0.5 per cent)
- 4) Spray/dip type tank for washing of egg

- 5) Mineral oil – colorless, odourless
- 6) Egg basket for holding/washing-perforated wire basket coated with plastics.
- 7) Space for drying of washed eggs.
- 8) Candling/grading machine.
- 9) Plastic bags for over wrapping.

2.3.2 Procedure

- 1) Collect fresh eggs, wash them, use either spray/dip type tank.
- 2) The water used for washing should have sanitizer (sodium hypochlorite 0.5 per cent) and wash water should be maintained at 110° to 120°F. Wash for about 3 minutes.
- 3) Dry the egg shell surface by fan.
- 4) Candle and grade the eggs.
- 5) Keep in filler flats separately for packing eggs according to size and grade.
- 6) Spray mineral oil while at the broader side of eggs. Mineral oil should be food grade, colourless and odourless.
- 7) Pack the egg in filler flats each holding 36 eggs and card board boxes to hold 30 doz. per box. Seal the box and hold in cold storage at 55 to 60°F with a relative humidity of 70 to 80% for marketing.
- 8) For retail pack, the eggs may be packed in egg cartons to hold 6 to 12 eggs over wrapped in polythene wrap to prevent escape of moisture and carbon dioxide from the egg contents.

2.3.3 Quality Evaluation

Procure 60 farm fresh eggs. Weigh all the 60 eggs individually. Mark each egg individually by pencil.

Divide the eggs into different groups as follows:

Group-1: 12 eggs treated with mineral oil and kept at room temperature.

Group-2: 12 eggs treated with mineral oil and kept in refrigerated condition (55 to 60°F).

Group-3: 12 untreated eggs kept at room temperature.

Group-4: 12 untreated eggs kept in refrigerated condition.

Group-5: 12 eggs as control (without any treatment).

Measure the quality of eggs for, albumen index, yolk index as follows:

On 0 Day: Measure initial quality of 12 eggs (control)

On 7th day: Measure quality of 6 eggs from each treatment group.

On 14th day: Measure quality of rest 6 eggs from each treatment group

Determine the quality of treated and untreated eggs at room temperature and refrigerated storage and compare with initial quality.

2.3.4 Observation

Observe and write your observations of quality during storage on tabular forms as follows: (Note the average value of each group).

Parameters	0 day	7 th day				14 th day			
	Group 5	Group 1	Group 2	Group 3	Group 4	Group 1	Group 2	Group 3	Group 4
Egg weight									
Weight loss									
Albumen index									
Yolk index									

2.3.5 Result

Rank the eggs treatment wise for the quality and conclude with your remarks.

2.4 PRECAUTIONS

- Always try to take all the eggs from same flock and same time.
- Mineral oil should be food grade, colourless and odourless.
- Maintain refrigeration temperature and humidity in the refrigeration room properly.
- Candling and grading should be done properly.