BHARATHIDASAN UNIVERSITY

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Programme : M.Sc., Biochemistry
Course Title; FOOD PROCESSING TECHNOLOGY
Course Code : BC001VAC

UNIT – IV
POULTRY

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EGG PROCESSING

Introduction:

- Eggs are among the most important, nutritious foods in the human diet. Eggs serve as a source of protein, essential vitamins and minerals, and other bioactive compounds; therefore, they contribute substantially to a healthy diet.

Processing of egg

1. Collection

- **Gathering**: Eggs are collected from poultry farms, typically from hens raised for egg production.
- **Transportation**: They are transported to processing facilities under controlled conditions to minimize damage and contamination.

- **2. Cleaning**
- **Washing**: Eggs are washed to remove dirt, feces, and bacteria. This is usually done with warm water and a mild detergent.
- **Drying**: After washing, eggs are dried to prevent moisture accumulation, which can lead to spoilage.

- **3. Candling**
- **Inspection**: Eggs are passed over a light source (candler) to check for quality. This process helps identify cracks, blood spots, or other defects.
- **Grading**: Based on the inspection, eggs are graded (e.g., AA, A, B) according to their quality and size.

- **4. Packaging**
- **Packaging Options**: Eggs are packed in cartons, which can be made of cardboard or plastic. They may be labeled with information about the grade, size, and nutritional content.
- **Storage**: Packaged eggs are stored in refrigerated conditions to maintain freshness and safety.
- **5. Pasteurization (Optional)**
- **Heat Treatment**: Some eggs undergo pasteurization to kill harmful bacteria while preserving the egg's functional properties. This is especially common for products intended for raw consumption (like in dressings).

Process of production

EGGWAY

Receiving fresh EGGS

Breaking

Separation

Pasteurisation

Spray drying

Quality check

Storage

Worldwide Delivery

BY PRODUCT UTILIZATION OF EGG

- **1. Eggshells**
- **Calcium Supplements**: Crushed eggshells can be used as a natural calcium source in dietary supplements.
- **Soil Amendments**: They can be added to gardens to improve soil structure and provide calcium for plants.
- **Crafts and Decoration**: Eggshells are often used in arts and crafts for decorative purposes

- **2. Egg Whites**
- **Protein Powders**: Dried egg whites are processed into protein powders for supplements and food products.
- **Meringues and Foams**: Used in various desserts and pastries for their ability to create volume and texture.
- **Clarification**: In beverages like wine and juice, egg whites can be used to clarify liquids.

- **3. Egg Yolks**
- **Emulsifiers**: Yolks are used in products like mayonnaise, salad dressings, and sauces due to their emulsifying properties.
- **Custards and Creams**: Commonly used in desserts for richness and texture.
- **Nutritional Supplements**: Egg yolks are rich in vitamins and fats and can be included in health foods.

- **4. Liquid Egg Products**
- **Food Service**: Pasteurized liquid eggs are popular in restaurants and catering for convenience.
- **Baking**: Used in commercial baking for consistency

- **5. Egg Protein**
- **Supplements**: Egg protein powder used in health foods and shakes for its high-quality protein content.

COMMERCIAL PROCESSING OF EGG LECHITIN AND OTHER EGGSOLIDS

Egg lecithin and other egg solids are processed using a variety of methods, including:

Extraction

- There are several methods for extracting egg yolk lecithin, including:

Solvent extraction:

- A simple and inexpensive method, but it's slow and the purity isn't high.

Supercritical extraction:

A method that can extract lecithin with higher purity.

Enzymatic hydrolysis extraction:

- A method that can improve extraction efficiency.

Column chromatography:

- The main method for producing high-purity egg yolk lecithin.

- Chemical treatment
- Lecithin can be chemically treated or modified to alter its functional characteristics. For example, hydrogen peroxide or benzoyl peroxide can be used to produce a lighter-colored product.
- Egg processing
- Eggs are processed in sanitary facilities under USDA inspection. The process includes washing, sanitizing, breaking, separating, clarifying, filtering, and freezing.
- Egg processing is important in the food industry because eggs are a valuable ingredient with desirable attributes like coagulation, emulsification, and foaming. However, eggs can deteriorate over time, so proper storage and quality control are necessary.

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UTLISATION OF EGG DERIVED PRODUCTS AS FOOD INGREDIENTS FERTILIZER FROM SHELLS.

INTRODUCTION

- Egg products are available in a variety of forms, including whole eggs, egg whites, and egg yolks, which can be frozen, refrigerated, or dried. Egg products can also be used in recipes that typically call for raw eggs, such as Caesar salad, hollandaise sauce, and ice cream.
- Eggs are a good source of nutrition, and they contain a variety of vitamins and minerals, including choline, vitamin A, D, E, K, B1, B2, B5, B6, B9, and B12.

Egg products are used in many food products

Baked goods: Eggs are used to create foams in cakes and meringues.

Mayonnaise and salad oils: Egg yolks are used as emulsifiers.

Pasta: Egg products are used in egg pasta.

Noodles: Egg products are used in noodles.

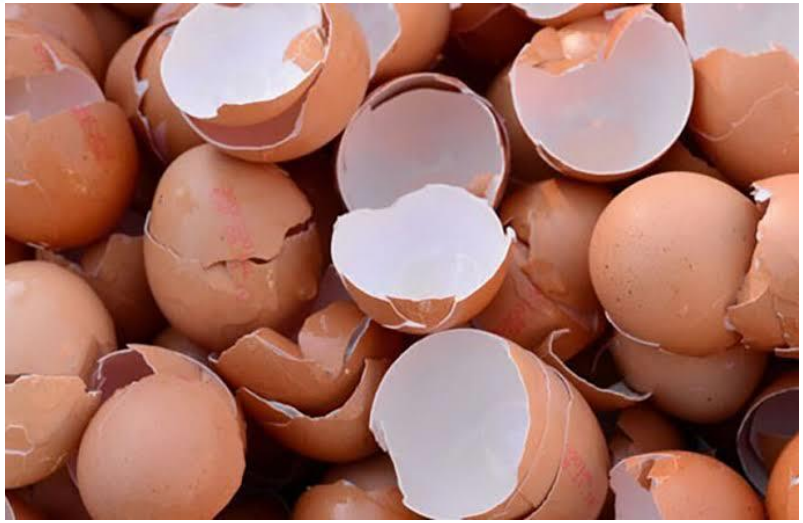
Candy: Egg products are used in candy.

Ice cream and sorbets: Egg products are used in dairy-based products.

Fertilized form of shell

- ✓ The shells also contain other minerals that help plants grow, including potassium, phosphorus, and magnesium. Eggshells are, therefore, an effective and inexpensive fertilizer for outdoor garden soil and houseplants.

- ✓ Egg shell fertilizer, or eggshell fertilizer, is made from crushed eggshells, which are high in calcium carbonate, a crucial mineral for strengthening plants' cell walls.



Benefits of egg shell fertilizer

Eggshells lower soil acidity.

Egg shell discourage blossom end rot

Egg control pests

Egg shel encourage root growth

Three ways to make egg fertilizer

- **Crush and egg shells**

Wash and rinse eggshells and let them dry. Crush the eggshells into a fine powder using a mortar and pestle, rolling pin, or food processor.

- **Grind the egg shells**

In the absence of a food processor or manual tools, you can use a coffee grinder to turn eggshells into powder. Add the ground eggshells to your compost bin to make mulch or pour them directly into your planting holes. Many master gardeners add coffee grounds, which are rich in nitrogen and potassium.

Continue……

- **steep the eggshell**
  - You can use eggshells to make a fertilizer tea that will add liquid calcium to your garden. Boil a gallon of water and add ten to twenty clean, dry eggshells. Let the shells sit in the water overnight, then strain them outs

conclusion

- Hatchery industry has a great demand these days,this has increased the production many folds.huge production rate releases large amount of waste in the environment which causes pollution.
- In order to reduce pollution this waste must be recycled and reused this would not only solve the problem of waste generation but also provide extra income to poultary farmers.
- Egg by-products such as eggshells and egg shell membrane can yield valuable products,more research must be done in this field and new methods should be explored in order to extract the best out of these waste products.

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THANK YOU