

Hygiene Guidelines on Preparation and Serving of Eggs and Egg Products

Introduction:

Eggs are often used in various dishes as they are nutritious and can be prepared in a variety of ways. However, eggs that appear normal from both the inside and the outside may be contaminated with pathogenic microorganism such as *Salmonella*. Hence, consumption of mishandled or undercooked eggs and egg products may increase the risk of foodborne diseases.

Objective:

These guidelines are intended to remind the food sector about food hygiene and safety issues to be aware in the preparation and serving of eggs and egg products, so as to reduce the risk of foodborne diseases.

Scope of Applicability:

1. The guidelines are applicable to establishments engaged in the production and serving of egg-containing food, including premises for takeaways and dining in, and buffet-style restaurants;
2. Eggs and egg products in the guidelines refer to shell eggs, liquid eggs and egg powder.

Definition:

Pasteurised eggs: refer to eggs¹ that have been treated by pasteurisation².

¹ Pasteurised eggs and egg products currently available in the market of Macao include shell eggs, egg yolks, liquid egg whites and liquid eggs.

² Pasteurisation is a process of heating food to a specific temperature for a set period of time to destroy pathogens and extend shelf life. It was named after its inventor Louis Pasteur, a 19th century French scientist.

Content:

1. Smart Purchase and Receipt

- Purchase eggs and egg products from reliable suppliers with good hygiene conditions, and be aware of the source of origin of eggs. Do not buy eggs and egg products from unknown sources or without inspection and quarantine;
- Purchase eggs and egg products in the amount as needed;
- Upon receipt of eggs and egg products, check if :
 - The eggs and egg products have been stored at the proper temperature according to the instructions on the product's packaging;
 - The packaging of liquid eggs is intact;
 - The eggshells are intact, without cracks or leakage.
- Reject eggs and egg products which are spoiled, expired, with abnormal smell or from unknown sources;
- Retain purchase and sales records, health certificates, or other relevant receipts and documents for inspection and source tracing by competent government authorities whenever necessary.

2. Proper Storage

- Eggs and egg products should be stored at the proper temperature according to the instructions on the product's packaging;
- Some egg producers do not require shell eggs to be stored in the refrigerator, but it is preferable to keep shell eggs in the refrigerator to maintain freshness and extend shelf life;
- Generally, shell eggs need not to be washed³ before they are stored in the refrigerator. But if the eggshell is soiled with poultry droppings, wash it properly and then use it immediately;
- Ideally, use separate refrigerators for storing raw food (e.g. shell eggs) and ready-to-eat food. If the food has to be stored in the same

³ Washing shell eggs with water may destroy the outermost layer of the eggshell, allowing bacteria to enter the egg through the pores on the shell.

refrigerator, keep ready-to-eat food in containers and place them in the upper compartment of the refrigerator while the raw food should be kept in the lower compartment of the refrigerator;

- Follow the “first-in, first-out” principle to use the eggs and egg products with earlier production dates first. Do not use expired eggs and egg products.

3. Careful Preparation

1) Avoid cross contamination

- When preparing food ingredients, separate eggs and egg products from other food ingredients;
- Use different sets of utensils to handle raw and ready-to-eat food separately;
- Use tools (e.g. egg separators) to separate the yolk from the white instead of using the eggshell.

2) Proper control of preparation time

- Use shell eggs taken out from the refrigerator as soon as possible, and do not put them back to the refrigerator⁴ again;
- Only prepare food for immediate service in response to a consumer’s order. Avoid preparing excessive amount of food or preparing food too far in advance.

3) Preparation of pooled eggs⁵

- Prepare pooled eggs just prior to cooking as much as possible;
- Plan the amount of pooled eggs needed and time of use to avoid preparation of pooled eggs too far in advance and in excessive amount;

⁴ Temperature changes in the environment for storage of shell eggs can lead to water condensation on the surface of eggshells, which may cause increased penetration of bacteria from the outside of the eggshells into the eggs.

⁵ Pooling of eggs refers to the practice of breaking a number of eggs into containers and using the combined eggs to make various egg dishes. It is a common practice in restaurants to save time and control portion size. However, if one of the eggs used is contaminated with *Salmonella*, the contamination will spread to the entire batch of pooled eggs. Consequently, consumption of undercooked egg dishes prepared from the contaminated pooled eggs may cause food poisoning.

- Break each egg in separate container to ensure it is in good condition before mixing the eggs together;
- Divide the pooled eggs in small amounts (e.g. one or two portions), cover them properly or keep them in lidded containers in the refrigerator;
- Use all pooled eggs as soon as possible and do not add new eggs to the remaining pool;
- Discard any remaining pooled eggs at the end of the day.

4. Thorough Cooking

- Cook eggs or egg-containing food thoroughly or until the yolk and white are firm;
- Use pasteurised eggs and egg products for dishes containing raw or undercooked eggs (e.g. sunny side-up eggs, poached eggs, omelettes, mayonnaise and egg pudding).

5. Time and Temperature Control

1) Temperature control

- Keep hot dishes at above 60 °C and cold dishes at 5 °C or below if they are not for immediate consumption after cooking.

2) Time control

- During the whole process of production and operation, it is necessary to shorten the duration that ready-to-eat eggs and egg products and pooled eggs are left in the temperature danger zone (between 5 °C and 60 °C) as far as possible, as they are potentially hazardous. If it is inevitable, follow the 2 hour/4 hour rule⁶:
 - Food held at the temperature danger zone for less than 2 hours should be stored in the refrigerator or used immediately;
 - Food held at the temperature danger zone for 2 to 4 hours should be used immediately;

⁶ Reference: "Hygiene Guidelines on Time and Temperature Control"

- Food held at the temperature danger zone for more than 4 hours should be discarded.

6. Maintenance of Good Personal Hygiene

- Wash hands properly before handling food, and after handling raw eggs, garbage and using the toilet;
- Wear disposable gloves if necessary. Change gloves after touching dirty items, or using them over 30 minutes;
- Wear clean and light-coloured outer clothing, protective overalls or aprons;
- Do not wear rings, bracelets, watches or other accessories, and do not wear nail polish or false nails;
- Use waterproof dressings to cover open wounds properly;
- Suspend from handling food when suffering from symptoms of illnesses such as runny nose, diarrhoea, vomiting and fever.

7. Cleanliness of Utensils, Equipment and Environment

- Thoroughly clean and disinfect all utensils, equipment and facilities that come into contact with eggs and egg products;
- Replace damaged or cracked utensils;
- All work surfaces should be made of impermeable and easy to clean materials, and kept well above the ground;
- Thoroughly clean and disinfect chopping boards before and after use. Discard chopping boards that are in poor condition (e.g. with cracks which make cleaning ineffective);
- Use lidded rubbish bins, empty and disinfect them regularly;
- Defrost refrigerator regularly;
- Do not keep pets in the establishments of production and operation.