# A Natural For Any Foodservice Operation





# The Egg and You

Can you think of a more popular item on any foodservice menu today than The Incredible Edible Egg™?

Foodservice operators are looking to egg dishes as a quick and easy way to improve their operations through a more varied menu, and lower food and labor costs. Even operations that aren't set up to operate at a profit can profit from The Incredible  $Egg^{TM}$ .

The public is also turning to egg dishes. That's because egg dishes are not only delicious and economical, but also in tune with the trend toward lighter meals.

This booklet will help you to better understand The Incredible Egg™ and how best to use it. This can easily lead to an improvement in both your menu and your operation.

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#### For more detailed information regarding eggs and egg dishes, contact:

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# **The Real Beauty of Eggs**

#### Take a look at the benefits of featuring eggs on your menu:

## **Familiarity**

Practically everyone in your operation, from kitchen help to managers, is familiar with eggs and knows generally how to use them.

## **Versatility**

Eggs work wonders as everything from garnishes to side dishes, from appetizers to entrees.

#### **Nutrition**

Eggs are a good source of protein, Vitamin D, phosphorous and riboflavin as well as an excellent source of choline and selenium.

#### **Low Food Cost**

Eggs are truly economical when compared with other sources of protein. If you're a commercial operator, eggs can be a new source of profits. Or, if you're a non-commercial operator, they can be a way to cut costs.

#### **Low Labor Cost**

Eggs are almost labor-free. Add that to their low cost and you see the real financial benefit of eggs.

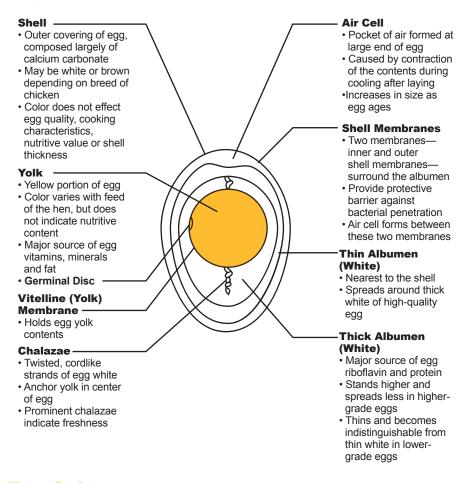
## Merchandisability

The merchandising potential of eggs is almost endless. For example, give your menu a contemporary look by featuring dishes such as omelets, quiches, and soufflés. Or, use egg garnishes to give other dishes added value at very little real cost.

# To Know 'Em is To Love 'Em

It's only natural that eggs are so popular because eggs are 100% natural. Take a look:

# **Egg Composition**



# **Egg Color**

**Shell Color -** It can be either white or brown and is determined by the breed of the hen. It has no effect on quality, cooking properties or nutritive value.

**Yolk Color -** It's determined by the feed of the hen.

# **Nutrient Content of One Large Egg**

#### Whole, Fresh, Raw 1, 2

Nutrient		Whole Egg	Egg White	Egg Yolk
Energy	calories	72	17	55
Protein	grams	6.3	3.6	2.7
Carbohydrate	grams	0.36	0.24	0.61
Total Fat	grams	4.8	0.06	4.5
Monounsaturated Fat	grams	1.8	0	2
Polyunsaturated Fat	grams	1	0	0.72
Saturated Fat	grams	1.6	0	1.6
Trans Fat	grams	0.02	0	0.02
Cholesterol	miligrams	186	0	184
Choline	miligrams	126	0.4	116
Riboflavin	miligrams	0.2	0.15	0.09
Vitamin B12	microgrm	0.45	0.03	0.33
Folate	microgrm	24	1	25
Vitamin D	IU	41	0	37
Vitamin A	IU	270	0	245
Vitamin B6	miligrams	0.09	0	0.06
Thiamin	miligrams	0.02	0	0.03
Vitamin E	miligrams	0.5	0	0.44
Selenium	microgrm	15.4	6.6	9.5
Phosphorus	miligrams	99	5	66
Iron	miligrams	0.88	0.03	0.46
Zinc	miligrams	0.65	0.01	0.39
Calcium	miligrams	28	2	22
Sodium	miligrams	71	55	8
Potassium	miligrams	69	54	19
Magnesium	miligrams	6	4	1

<sup>&</sup>lt;sup>1</sup> U.S. Department of Agriculture, Agricultural Research Service, 2010. USDA National Nutrient Database for Standard Reference, Release 23. Nutrient Data Laboratory Home Page: <a href="http://www.ars.usda.gov/nutrientdata">http://www.ars.usda.gov/nutrientdata</a>

<sup>&</sup>lt;sup>2</sup> Discrepancies between nutrient levels in the white+yolk vs. the whole egg are due to sampling error.

# **Eggs, a Natural Wonder**

## **Egg Nutrition**

A single large egg provides 12% of the daily requirement of protein for 70 calories. The 2010 Dietary Guidelines suggest Americans "eat a nutrient-dense breakfast." Evidence suggests that the high quality protein in eggs provides steady and sustained energy because it does not cause a surge in blood sugar or insulin levels, which can lead to a rebound effect or energy "crash" as blood sugar levels drop. Recent research shows that eggs eaten at the start of the day help people feel more satisfied, allowing them to reduce their caloric intake for the rest of the day and prevent snacking between meals.

Eggs contain the highest quality protein and are often used as a standard to measure the quality of other protein sources. Eggs also have the highest biological value of any protein, meaning that the essential amino acids they provide are used very efficiently by the body. Eggs also contain varying amounts of vitamins A, D, E, K, B6, B12, folate, and a variety of minerals (particularly riboflavin, phosphorus, and iron). Because eggs are very easy to digest, they are frequently included in therapeutic diets.

The yolk makes up just over one third of an egg. It provides three-fourths of the calories, all of the fat-soluble vitamins (A, D, E, and K), and all of the choline, lutein, and zeaxanthin. The yolk also provides most of the phosphorus, iron, and folate and almost half of the protein and riboflavin. The white (albumen) provides more than half of the total protein and riboflavin.

Choline, an essential nutrient, is shown to be important for proper brain development in the fetus and newborn and may play a role in memory function throughout life and into old age. Lutein and zeaxanthin may prevent macular degeneration, a leading cause of blindness in the elderly in the U.S. Though these nutrients are present only in small amounts in eggs, research shows that they may be more bioavailable, or absorbed and utilized by the body, when obtained from egg yolk than from richer sources.

# **Eggs, a Natural Wonder**

## **Eggs and Cholesterol**

Many factors - including genetics, body weight, and baseline blood lipids - influence the response of plasma cholesterol to dietary changes, so the relationship between diet and blood cholesterol is highly individual. In general, research demonstrates that dietary saturated fat and trans-fat have the greatest impact on blood cholesterol. Dietary cholesterol once thought to play a role in determining plasma cholesterol levels, is now known to have a negligible effect on blood lipids in most healthy people.

Limiting dietary saturated fat and trans-fat is more effective in improving lipid profiles than restricting dietary cholesterol.

The 2010 Dietary Guidelines states: Independent of other dietary factors, evidence suggests that one egg (i.e., egg yolk) per day does not result in increased blood cholesterol levels, nor does it increase the risk of cardiovascular disease in healthy people."

Many cholesterol-containing foods are also naturally high in saturated fat. Eggs are one of the exceptions. One large egg contains 1.5 grams saturated fat and 70 calories. Overall, eggs contain a moderate amount of fat (4.5 grams), which is composed mainly of unsaturated fatty acids.

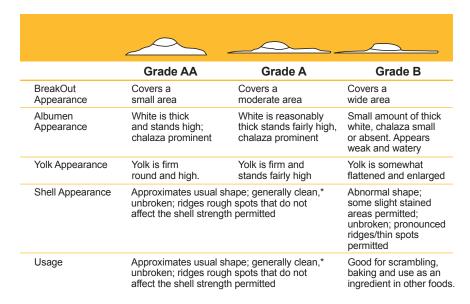
Based upon a new nutritional analysis for eggs conducted by the U.S. Department of Agriculture's Agricultural Research Service in 2010, a large egg contains 186 mg of cholesterol (down from 212 mg recorded in 2005). For a large egg, this represents a 14% reduction in cholesterol content.

# A Foodservice Guide to Shell Eggs

## Egg Size

JUMBO	EXTRA LARGE	LARGE	MEDIUM	SMALL	PEE WEE
Minimum w	t. per dozen				
30 oz.	27 oz.	24 oz.	21 oz.	18 oz.	15 oz.
Minimum wt. per 30 dozen case					
56 lbs.	50.5 lbs.	45 lbs.	39.5 lbs.	34 lbs.	28 lbs.

# **Egg Quality**



## **Egg Size Substitutions**

Jumbo	X-Large	Large	Medium	Small
1	1	1	1	1
2	2	2	2	3
5	5	6	7	8
9	10	12	13	14
18	21	24	27	28
37	44	50	56	62
		I		

# A Foodservice Guide to Shell Eggs

## **Grading**

The quality of an egg is determined by the grade of the egg and is not related to size. All eggs are classified according to the U.S. Standards for interior and exterior quality factors. This determines the grade of the egg as AA, A, or B. Only eggs packed in official USDA plants and sampled by official USDA graders can be packed in cartons bearing the USDA grade shield. USDA grading is a voluntary service offered to processing plants that meet minimum USDA equipment, facility, sanitary, and processing requirements.

## **Specifications**

Shell egg specifications can be tailored to meet specific needs of buyers and can vary in complexity and detail. At a minimum, specifications should include grade, size, type of packing and packaging, and number of purchase units. An example might be:

Fresh shell protected eggs, U.S. Consumer Grade AA Large, 30 dozen per shipping case, 15 cases. Cartons labeled with an expiration date not to exceed 28 days from date of packaging. Deliveries are to be made within 5 days of official grading.

# **Purchasing**

When purchasing shell eggs, follow these guidelines:

- 1. Accept only clean, sound, and odor-free eggs.
- Purchase eggs according to grade and size desired and only in the quantity needed for one to two weeks.
- 3. Accept only eggs delivered under refrigeration at a temperature of 45°F or below. Transfer to refrigerated storage promptly.
- 4. Accept only eggs packed in snug-fitting fiberboard boxes to reduce breakage. Eggs are generally packed and purchased in 30 dozen cases or half cases of 15 dozen.
- 5. Consider size and grade in relation to use and price. Also, compare prices for different sizes of eggs of the same grade.
- 6. Check the grade of eggs delivered to you. Inspect the shells and then randomly break a few. These eggs should meet the guidelines for their given grades. (Refer to Egg Quality Chart, page 7.)

## Storage, Handling, and Refrigeration

Shell eggs must be transported and stored at a temperature of 45°F or below at all times. Proper storage and handling are important in maintaining quality. If not refrigerated properly, Grade AA eggs can rapidly degrade to Grade B eggs. Eggs kept at room temperature (or above 68°F) may lose more quality in one day than in one week under refrigeration.

# **Egg Handling and Safety**

Kept under proper refrigeration at 45°F or below (do not freeze), eggs will retain their quality for several weeks. Cool temperatures slow or stop the growth of most bacteria. Eggs should be stored in their original packaging materials to prevent the loss of moisture. Store eggs away from foods such as fish, onions, apples, and cabbage as eggs can absorb strong odors.

# **Assuring Food Safety**

Any food, particularly protein-rich animal foods, can carry microorganisms that cause disease or spoil the food. Shell eggs without cracks have chemical and physical properties that help to deter bacterial growth. Examples of chemical barriers to bacterial growth are iron-binding complexes and the presence of lysozyme in the egg white. The egg shell and the membranes between the shell and the white and between the white and the yolk act as physical barriers to bacterial growth inside the egg. However, eggs are more susceptible to bacterial growth once the shell and membranes are broken, the egg is exposed to oxygen, and the nutrients from the white and the yolk are mixed. The microorganism of particular importance to eggs and egg products is a bacterium called *Salmonella* (sal'mo' nel' la). This bacterium is typically found in the gastrointestinal tract of warm-blooded animals. Although *Salmonella* may not make the carrier animal ill, if it gets in the human food supply it can make people ill.

The safety of shell eggs is first addressed ensured by diverting any eggs with cracks, chips or breaks (which encourage bacteria to pass through the shell) away from the human food supply. Additionally, intact eggs are washed and sanitized shortly after they are laid to remove any microorganisms that might be present on the surface of the shell. A continuation of sanitary practice (with particular emphasis on hand-washing during food preparation) is necessary to ensure that food is not re-contaminated with bacteria, viruses, or parasites.

Since Salmonella Enteritidis (abbreviated SE) can survive in the reproductive tract of the hen, it can be deposited inside the shell in the egg white in rare instances (estimated to be 1 in 20,000 eggs in the U.S.). Although the number of bacteria per egg is likely to be low (because the egg white discourages bacterial growth), once the shell is cracked and the iron-rich yolk mixed with the white, bacteria grow with great ease. Likewise, if the yolk membrane deteriorates, which it will in several weeks or at temperatures over about 60°F, bacteria can grow inside the intact shell egg. Even though SE in eggs is rare, eggs must be treated in a way to block the transmission of disease.

# **Egg Handling and Safety**

Food safety control measures include keeping eggs cool and using eggs less than 28 days old. Since bacteria can grow readily once the shell is broken, the practice of pooling eggs is discouraged. Menu items made with shell eggs and cooked in response to a consumer's order should be prepared for immediate service. For the preparation of large quantities of eggs, pasteurized egg products are recommended. The use of a thermometer when preparing sauces and casseroles will ensure the food has reached appropriate temperatures. Reaching a temperature of 160°F or holding food at 145°F for 3.5 minutes will destroy SE if it is present. Additionally, containers and utensils that have contact with raw egg must be washed and sanitized before being used again, even for the same recipe. Vulnerable populations, such as the very young or the aged, can be protected by using pasteurized egg products.

## Egg Handling and Preparation Tips

- Store in cooler immediately upon receipt. Refrigerate at 45°F or below.
   Do not freeze.
- Store shell eggs in their case.
- Store away from foods with strong odors (such as fish, apples, cabbage, or onions).
- · Rotate First in/First out.

#### Storage and Handling

- · Always wash hands with soap and warm water.
- Take out only as many eggs as needed for immediate use. Do not stack egg flats (trays) near the grill or stove.
- Use only clean, uncracked eggs.
- Eggs should not be washed before using; they are washed and sanitized before they are packed.
- Use clean, sanitized utensils and equipment.
- Never mix the shell with internal contents of the egg.
- Do not reuse a container (blender, bowl, mixer, etc.) after it has had raw egg mixture in it. Clean and sanitize the container thoroughly before using again.

# **Egg Handling and Preparation Tips**

## **Preparation**

To ensure food safety, whole eggs should be cooked until the white and yolk are firm. Egg containing-dishes, including quiches and casseroles, should be cooked to an internal temperature of 160°F. is set (completely coagulated and firm) and the yolk is beginning to thicken (no longer runny but not hard) are considered to have met necessary time and temperature requirements for safety. Scrambled eggs need to be cooked until firm throughout with no visible liquid egg remaining. Egg white coagulates between 144°F and 149°F and the yolk between 149°F and 158°F. Therefore, it is not necessary to cook eggs until rubbery in order to kill any bacteria that may be present.

- A good rule of thumb is that whole eggs should be cooked until the white and yolk are completely coagulated (set).
- Cook scrambled eggs in small batches no larger than 3 quarts according to rate of service, until firm throughout and there is no visible liquid egg remaining.
- Pooling eggs, the practice of breaking large quantities of eggs together and holding before or after cooking, greatly increases the risk of bacterial growth and contamination.
- Never leave egg or egg-containing dishes at room temperature more than one hour (including preparation and service time).
- Egg dishes for those who are pregnant, elderly, very young, or ill should be thoroughly cooked. These groups at highest risk should avoid consuming raw or undercooked eggs. Pasteurized egg products are a low-risk alternative for these groups.
- · Hold cold egg dishes below 40°F.\*
- Hold hot egg dishes above 140 F.\* Do not hold hot foods on buffet line for longer than one hour.
- Always cook eggs and egg dishes before placing on steamtable.
- Do not combine eggs that have been held in a steamtable pan with a fresh batch of eggs. Always use a fresh steamtable pan.
- Do not add raw egg mixture to a batch of cooked scrambled eggs held on a steamtable.
- When refrigerating a large quantity of a hot egg-rich dish or leftovers, divide into several shallow containers so it will cool quickly.
- \* Internal temperature

# A Foodservice Guide to Egg Products

The term "Egg Products" refers to processed or convenience forms of eggs obtained by breaking and processing shell eggs. Egg products include whole eggs, egg whites, and egg yolks in frozen, refrigerated liquid, and dried forms available in a number of different product formulations, as well as specialty egg products. Specialty egg products include: pre-peeled hard-cooked eggs, egg rolls or "long eggs", omelets, egg patties, quiches, quiche mixes, scrambled eggs, fried eggs, and others.

Egg products are becoming increasingly popular in foodservice operations. That's because they are convenient to use and also provide a cost savings with regards to labor, storage, and portion control.

Frozen, refrigerated liquid, and dried egg products are similar to shell eggs in nutritional value and most functional properties.

## **Food Safety**

By law, all egg products are processed in sanitary facilities under supervision of the USDA and bear the USDA inspection mark. They must be pasteurized (which removes all harmful bacteria) and are routinely sampled and analyzed for *Salmonella*. If an egg product were contaminated with *Salmonella*, it would be barred from consumer channels. Keep in mind that even though egg products are pasteurized, proper handling and storage is still vital.

Pasteurized egg products are being used more often to help ensure food safety. They may be used to protect high-risk populations or when preparing lightly cooked foods (such as sauces, salad dressing, French toast, or Monte Cristo Sandwiches).

# **Large Shell Egg Equivalency**

Frozen or Refrigerated Liquid			
	Weights	Measures	
Whole Eggs:			
1	1¾ oz.	3 Tbsp.	
10	1 lb. 1¾ oz.	2 Cups	
12	1 lb. 5½ oz.	2½ Cups	
25	2 lbs. 13 oz.	1 qt. 11/4 Cups	
50	5 lbs. 8 oz.	2 qts. 21/2 Cups	
Yolks:			
10	7 ¼ oz.	¾ Cup	
12	8½ oz.	3/4 Cup 2 Tbsp.	
22	1 lb.	2 Cups less 2 Tbsp.	
Whites:			
10	11½ oz.	11/4 Cups 2 Tbsp.	
12	14 oz.	1½ Cups 2 Tbsp.	
14	1 lb.	2 Cups less 2 Tbsp.	

Dried Whole Eggs			
Dried Whole Sifted	Water		
3 oz.	1 Cup		
6 oz.	2 Cups		
12 oz.	1 Qt.		
1 lb. 9 oz.	2 qt. + 1/3 Cup		
3 lb. 2 oz.	1 Gal .+ 2/3 Cup		
4 lb. 11 oz.	6 Qt. + 1 Cup		
6 lb. 4 oz.	2 Gal. + 1 1/3 Cup		
	Dried Whole Sifted 3 oz. 6 oz. 12 oz. 1 lb. 9 oz. 3 lb. 2 oz. 4 lb. 11 oz.		

# A Foodservice Guide to Egg Products

# **Purchasing**

Follow these basic guidelines when purchasing egg products.

- 1. Purchase only pasteurized egg products.
- 2. Specify egg products bearing the USDA inspection mark.
- 3. Specify exact type of egg products desired: frozen salted whole eggs, refrigerated egg whites, dried scrambled egg mix, etc.
- 4. Accept only egg products that are in tightly sealed containers. Frozen products must show no signs of thawing.

## **Specifications**

For egg products, specifications may include:

- 1. Type of product
- 2. Packaging
- 3. Various lab analyses for physical, nutritional chemical information, etc.
- 4. Bacterial specifications (i.e., coliforms, total plate count)

## **Storage and Handling**

**Frozen-Egg Products:** Frozen egg products should be transferred to the freezer immediately upon delivery. Store frozen eggs at 0°F or below.

Containers should remain tightly sealed during storage.

To defrost, leave container in refrigerator or set in cold running water. The container should remain tightly sealed.

Never thaw at room temperature. Thaw only the amount of product needed for required use. Use defrosted eggs promptly.

Cover and refrigerate any leftover thawed portions and use within one to three days.

**Refrigerated Liquid Egg Products:** should be transferred to refrigerators immediately upon delivery. Always store in refrigerator, keeping seal intact. Check the label of the liquid egg product you are using as shelf-life may vary. Once opened, use immediately.

Dried Egg Products should be stored in a cool, dry place away from light, and preferably in the refrigerator. (Never above 70°F.)

After opening, seal tightly for re-storage and refrigerate.

If combined with dry ingredients and held for storage, seal tightly in a closed container and store in the refrigerator.

Reconstitute only the amount of dried eggs that will be used immediately.

**Specialty Egg Products:** should be kept refrigerated or frozen according to their requirements.

# **The Solution Is Simple**

Practically any problem you have with eggs can be solved quickly and easily. Here are a few examples:

#### **Problem:**

#### Greening

Cooked eggs may turn green (a natural chemical reaction) if held over heat for an extended period of time. Here's how to avoid it:

#### **Solutions:**

#### **Omelets and Scrambled Eggs**

- Use fresh eggs (Grade AA or A). Greening is more likely in older eggs.
- Cook eggs in small batches, no larger than three quarts.
- Substitute a medium white sauce for the liquid in the egg mixture. (One part white sauce to five parts egg.)
- Use temperatures of 140°F and above for steamtable holding.
- Do not hold hot foods on buffet line for longer than one hour.
- Use only stainless steel equipment and utensils.
- Try a liquid egg product if greening is frequent. (Many of these contain citric acid which retards greening.)
- Beat in 1/4 teaspoon lemon juice for every 18 large eggs, or 1/4 teaspoon citric acid crystals for every dozen large eggs to prevent greening.

#### **Hard-Cooked Eggs**

- Simmer eggs (185-190°F) in water. Don't boil.
- · Cool immediately in cold water. Peel when cool.

# **The Solution Is Simple**

#### **Problem:**

#### Weeping

Water separating from cooked eggs is caused by over-cooking or by cooking and holding at high heat or from the addition of watery ingredients. Here's how to avoid it:

#### Solutions:

#### Scrambled Eggs

- Prepare eggs in small batches, no larger than three quarts.
- Substitute a medium white sauce for the liquid in the egg mixture. (One part white sauce to five parts egg.)
- Use temperatures 140°F and above for steamtable holding.
- Use egg products with stabilizers (i.e., gums) added.
- Limit the amount of added ingredients and make sure they are well-drained.

#### **Meringues** (Due to under-coagulation of the foam during beating or cooking)

- · Beat whites until frothy before adding sugar.
- Add sugar slowly.
- Stop frequently and lift whites from bottom of bowl to ensure thorough and even beating.
- · Use clean metal or glass (not plastic) bowl.
- Beat until sugar is dissolved, the peaks barely fold over, and whites do not slip from sides when bowl is tilted.
- If the meringue is to be used on a pie, place it on a hot 160°F or above filling, and brown immediately at 350°F, for approximately 15 minutes (3 egg white meringue).
  - For pie meringues containing a larger number of egg whites, reduce baking temperature and increase baking time to achieve temperature of 160°F in center of meringue.

#### **Baked Custards** (Includes quiches, custard pies, timbales)

- Blend egg and milk mixture thoroughly so that no strands of white remain.
- · Cook only until custard tests done.
- Use a water bath for even cooking. Place baking pan in large container and fill larger container with hot water to within one inch of top of custard.
- Baked custards, quiches, custard pies, and timbales should be baked to an internal temperature of 160°F and mixture tests done (knife inserted near center removes cleanly).

# **The Solution Is Simple**

#### **Problem:**

#### **Rubbery and Dry**

The problem is the result of overcooking and high heat. It generally follows weeping. Here's how to avoid it:

#### **Solutions:**

#### **Omelets and Scrambled Eggs**

- Cook at medium heat until no visible liquid egg remains.
- · Cook in small batches, no larger than three quarts.
- Use a medium white sauce as liquid in egg mixture (one part white sauce to five parts egg).
- Use temperatures of 140°F and above for steamtable holding.

#### Fried

- · Cook over medium heat on preheated grill or in preheated pan.
- Use the right amount of fat to avoid toughening, about one teaspoon per egg.
- · Baste with fat or steam-baste by adding small amounts of water and covering.

# **Eggs Turn On a Menu, Instantly**

## **Lighter, Brighter Ideas**

It's incredible what eggs can do for any menu—including yours! Soufflés, Frittatas, Omelets, Quiches, Egg Salads...every one is a dramatic and delicious dish that will give your menu a new elegant look for breakfast, lunch, brunch, or dinner. There are hundreds of egg dishes waiting for you to discover, and each is a breeze to prepare. You already have many ingredients in stock. So add egg dishes to your menu today. You'll wonder why you didn't do it sooner.



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