

HEAT TREATMENTS



change in structure, taste, smell and nutritional values

boiling point around 100°C

Basic Methods of Cooking Food

Cooking is a process in which food is exposed to heat in order to change its structure, flavor, aroma, and nutritional value. It not only affects the taste profile of dishes but also their safety, as high temperatures can destroy harmful microorganisms and bacteria. In gastronomy, there are several basic cooking methods that differ depending on how heat is applied to food.

Boiling

Boiling is one of the most common and oldest methods. During boiling, food is heated in a liquid such as water, broth, milk, or another liquid base. The cooking temperature is usually around 100°C, the boiling point of water. Boiling is ideal for preparing soups, sauces, pasta, rice, potatoes, or eggs.

Types of boiling:

Steaming: Food is cooked over hot water vapor, allowing gentler preservation of nutrients. This method is ideal for vegetables, fish, and certain types of meat.

Boiling in water: Food is submerged directly in boiling water. This method is used for cooking potatoes, pasta, or rice.

Advantages of boiling:

Preserves many nutrients, especially when using the steaming method.

Essential for certain foods, such as potatoes or rice, to achieve the desired texture.

Disadvantages:

Some nutrients may be lost during boiling, especially when boiled in water, as vitamins and minerals leach into the liquid.



Frying

Frying is a method in which food is quickly cooked in hot fat, usually oil. Frying can be deep, where food is completely submerged in oil, or pan-fried, using a smaller amount of fat. Frying is a fast way to achieve a crispy and golden texture, typical for dishes like fries, schnitzels, or fried fish.

Types of frying:

- **Deep frying:** Food is immersed in very hot oil (temperature 160–190°C), ensuring quick cooking and a golden crust.
- **Pan-frying:** Uses a smaller amount of oil, usually at temperatures between 160–180°C.

Advantages of frying:

- Fast and efficient, suitable for preparing crispy dishes.
- Preserves flavor and aroma of the food.

Disadvantages:

- Can be higher in calories and less healthy due to the fat content and potential formation of harmful compounds at high temperatures.



Baking

Baking is a method in which food is prepared in an oven using dry heat. Baking temperatures usually range between 150 and 220°C, depending on the type of dish. Baking is ideal for preparing bread, cakes, meat, or vegetables. Baking develops complex flavors, especially in meat and baked goods.

Advantages of baking:

- Maintains the natural flavor and nutrients of food, especially when baking without added fat.
- Baked dishes often have a crispy and tasty crust.
- Allows for preparing larger portions or whole meals (e.g., roasted chicken, lasagna).

Disadvantages:

- Longer preparation time than frying or boiling.
- Sometimes difficult to achieve even cooking, especially for thicker cuts of meat.

Grilling

Grilling is a method where food is cooked over direct heat, either on an open flame or an electric/gas grill. Grilling temperatures can reach very high levels (up to 300°C), giving food a characteristic grilled flavor and crispy crust. Grilling is popular for meat, vegetables, and fish.

Advantages of grilling:

- Quick preparation.
- Distinct flavor from smoke and high heat.
- Fat often drips away, leading to lower calorie content.

Disadvantages:

- Can be difficult to control temperature and achieve even cooking.
- High heat can damage some nutrients and produce undesirable compounds.

Braising

Braising is a method where food is cooked in a small amount of liquid at low heat. Food is usually braised in a closed pot, allowing all flavors and juices to be preserved. Braising is ideal for meat, vegetables, or legumes that require time to become tender.

Advantages of braising:

- Retains most nutrients.
- Produces tender and juicy dishes with rich flavor.
- Ideal for preparing tougher cuts of meat.

Disadvantages:

- Long cooking time.



Modern Methods

Sous-vide

Sous-vide is a cooking method in which vacuum-sealed food is cooked at very low, stable temperatures, usually between 40 and 85°C, for several hours or even days. This method has become popular not only in professional kitchens but also at home due to the availability of sous-vide cookers.

Advantages:

- Precise temperature control ensures even cooking and avoids overcooking.
- Preserves nutrients and flavor, as food cooks in a sealed environment without direct water contact.
- Maintains juiciness and texture, ideal for meat, fish, and vegetables.

Disadvantages:

- Long cooking time, which may not suit quick meals.
- Not suitable for all foods, such as baked goods or dishes requiring a crispy texture.

Induction cooking

Induction cooking is a modern technology that uses a magnetic field to heat metal pans and pots, saving time and energy. This method is increasingly popular due to its speed, energy efficiency, and safety.

Advantages:

- Fast and efficient, ideal for dishes requiring rapid cooking.
- Energy-saving: heats only the cookware, reducing energy loss.
- Safety: induction surfaces remain relatively cool to the touch.

Disadvantages:

- Requires special cookware with ferromagnetic bottoms.
- Higher initial cost compared to traditional gas or electric stoves.

Pressure cooking

Pressure cooking (modern pressure cookers) allows cooking under high pressure, reducing cooking time by up to 70%. It is popular for its efficient and fast cooking, suitable for modern busy lifestyles.

Advantages:

- Speed: prepares meals in a fraction of the time required by traditional methods.
- Energy-saving due to shorter cooking times.
- Retains nutrients that may be lost with other methods.



Air fryers

Air fryers have become popular at home for their ability to cook with minimal oil, enabling healthier frying. The device uses hot air to achieve a crispy texture, ideal for foods normally fried.

Advantages:

- Healthier alternative to frying: uses very little oil, reducing calories and fat content.
- Fast and efficient, easy to use, ideal for home cooking.

Disadvantages:

- Limited capacity, which can be an issue for cooking for multiple people.
- Some foods, like fried chicken, may lack the same texture as traditional frying.



Key Process

Cooking is a key process that affects not only taste but also the nutritional value of food. Each method—boiling, frying, baking, grilling, or braising—has its advantages and disadvantages, and the choice depends on the type of dish and desired outcome. Proper cooking methods can significantly improve flavor and texture while preserving nutrients. Modern cooking trends focus on efficiency, nutrient retention, and enhancing taste and texture. Technologies like sous-vide, induction cooking, pressure cookers, and air fryers offer new possibilities for cooks seeking faster, healthier, and more precise cooking. As technology progresses, new innovations are expected to further transform how we prepare food.