



CONCEPT OF FOOD, NUTRITION AND METHODS OF COOKING

Presentation Outline



Part 1: Fundamentals

- Concept of Food & Cooking Benefits
- Pre-Preparation Kitchen Practices
- Heat Transfer Mechanisms



Part 2: Cooking Methods

- Moist Heat (Boiling, Steaming, Stewing)
- Fat Medium & Frying Practices
- Dry Heat & Modern Cookware



Part 3: Health & Heritage

- Traditional Indian Techniques
- Nutrient Losses & Conservation
- Enhancing Nutritive Value & References

Why Do We Cook Food?

- ✓ **Chemical Transformation:** Heat converts complex structures into simpler compounds easily utilized by the body.
- ✓ **Pathogen Destruction:** High temperatures eliminate harmful bacteria, toxins, and microbes for safe consumption.
- ✓ **Enhanced Palatability:** Softens texture, making food easier to chew, digest, and enjoy.
- ✓ **Aroma & Appeal:** Brings out rich aromas and vibrant colors that stimulate the human appetite.



Pre-Preparation Steps in the Kitchen



Cleaning & Washing

Removes dirt, pesticide residue, debris, and spoiled portions from raw ingredients and cereals.



Sieving & Peeling

Sieving refines flour by removing lumps. Peeling removes tough or inedible outer skins where appropriate.



Cutting & Grinding

Cutting ensures uniform sizing for even cooking. Grinding blends ingredients into smooth pastes for texture.

Mechanisms of Heat Transfer



Conduction

Heat spreads through direct solid contact, such as food resting directly on a hot metal pan.



Convection

Circulation currents in liquids or gases transfer heat uniformly throughout boiling water or ovens.



Radiation

Energy transmitted via electromagnetic waves directly to food without direct contact (e.g., microwaves).

Method of Cooking: Boiling

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Boiling (Water Medium)

Definition: Immersing food in water at 100°C and keeping it at that temperature until tender. Ideal for rice, dal, pulses, roots, and tubers.

Advantage: Simple, requires no special skills, and ensures uniform cooking.

Disadvantage: Excess water loss can leach out up to 70% of Vitamin C.



Cooking Method: Simmering & Poaching

Simmering & Poaching

Definition: Simmering gently cooks food with small bubbles just below boiling. Poaching uses shallow liquid at 80–85°C for delicate foods like eggs and fish.

Advantage:

Preserves shape, tender texture, and avoids scorching.

Disadvantage: Takes longer; water-soluble nutrients may dissolve.



Method of Cooking: Steaming & Pressure Cooking

Steaming & Pressure Cooking

Definition: Steaming uses hot vapor without direct water contact (e.g., idlis, momos). Pressure cooking uses sealed steam pressure to reach 120°C.

Advantage:

Preserves delicate nutrients, saves fuel, and softens tough legumes fast.

Disadvantage:

Requires specialized equipment and careful safety monitoring.



Cooking Method: Sautéing & Shallow Frying

Sautéing & Shallow Frying (Oil Medium)

Definition: Sautéing uses minimal oil with frequent tossing. Shallow frying cooks food in a generous layer of fat for cutlets, tikkis, and parathas.

Advantage: Greatly enhances flavor, aroma, and crust texture.

Disadvantage: Food can absorb excess fat if oil temperature is low.



Method of Cooking: Deep Frying

Deep Frying

Definition: Completely submerging food in hot oil (180–220°C). Quick convection currents create a crispy golden-brown exterior (e.g., samosas, pakoras).

Advantage:

Produces highly palatable, crispy textures and extends shelf life.

Disadvantage: High calorie content; repeated heating creates harmful compounds.



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Cooking Method: Roasting & Grilling

Roasting & Grilling (Dry Heat)

Definition: Roasting cooks food on hot surfaces or tandoors. Grilling uses indirect radiant heat over fire or electric grids for paneer tikka and kebabs.

Advantage: Imparts smoky aroma, rich flavor, and uses minimal fat.

Disadvantage: Risk of charring; requires constant monitoring.



Modern Methods: Microwave & Air Fryer

Microwave & Air Fryer Technology

Definition: Microwaves penetrate and heat food internally via electromagnetic waves. Air fryers circulate super-heated air for a crispy finish with minimal oil.

Advantage:

Extremely fast, energy-efficient, and reduces dietary fat.

Disadvantage:

Requires specialized safe utensils and batch cooking.



Traditional Indian Culinary Techniques

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- 🌿 **Tempering (Tadka):** Frying whole spices in ghee or oil to release essential aromatic oils.
- 🌿 **Slow Cooking (Dum):** Sealing containers to cook food slowly in its own steam for deep flavor.
- 🌿 **Fermentation:** Natural microbial breakdown in batter, boosting B-vitamins and digestion.
- ✅ **Clay Pot Cooking:** Traditional vessels adding earthy minerals and retaining moisture.



Losses of Nutrients During Cooking

Nutrient / Vitamin	Cause of Loss	Prevention / Conservation Tip
Vitamin A	Oxidation, excessive heat, and open-pan frying	Cook in covered vessels; avoid extreme temperatures
Vitamin B & C	Water-soluble leaching and discarding cooking water	Wash vegetables before cutting; use minimal water
Proteins	Prolonged high heat making structures tough	Monitor cooking times carefully; avoid overcooking

Enhancing Nutritive Value



Mutual Supplementation

Combining cereals and pulses (like khichdi or rice & dal) to supply balanced essential amino acids.



Germination & Sprouting

Soaking grains (moong or chana) increases digestibility and vitamin content naturally.



Food Fortification

Adding essential micronutrients (iron in flour, iodine in salt) to prevent nutritional deficiencies.

Conclusion

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Cooking is a wonderful science combined with everyday art. It ensures our food is safe from harmful germs while improving taste and texture.

By applying proper pre-preparation techniques, understanding heat transfer, and choosing the right cooking method, we achieve optimum health benefits while honoring traditional wisdom.



References & Sources

1. IGNOU Study Material - Introduction to Food Groups, Food Pyramid, and Cooking Methods (Pages 63–84).
2. Home Science Textbook Notes - Food Preparation and Nutrient Conservation Principles.
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4. Standard Nutritional Science Guidelines on Food Fortification and Hygiene.



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