

# Chapter 17

## Natural and Artificial Flavorings

How Baking Works

# Words, Phrases, and Concepts

- Flavor profile
- Volatile
- Top notes, middle notes
- Background or base notes
- Aftertaste or finish
- Flavorings
- Herbs
- Spices
- Processed flavorings
- Volatile or essential oils
- Extracts
- Flavor compound
- Flavor emulsion
- Vanilla powder

# Introduction

Flavor is extremely important to consumers.

- Often more important than appearance or texture/mouthfeel.
- Consists of basic tastes, trigeminal effects, and smell.
- To develop your sense of flavor, or taste, practice evaluating a range of ingredients/products and describing their flavors.
  - As with any skill, this takes practice and experience.

# Flavor Profile

## Flavor profile

- Is a description of a product's flavor from when it is first smelled until after it is swallowed.
  - Term sometimes refers to the distinctive flavor combinations that characterize the food of a particular culture.
    - Example: flavor profiles of American and European apple desserts are often different.
- Foods are most satisfying when they consist of a full flavor profile.
  - Full flavor profile has top notes, middle notes, base notes, and aftertaste.

# Flavor Profile

Top notes provide instant impact.

- From small, volatile molecules that evaporate easily.  
*Examples:* Smell of freshly cut lemons and other fresh fruits.

Middle notes provide staying power.

- From large, heavy molecules that evaporate slowly.  
*Examples:* Caramelized sugar, cooked fruit, cream and egg.

Background or base notes linger longer.

- From the largest, heaviest molecules that might not evaporate at all.

*Examples:* Basic tastes; trigeminal effects, including the tingling of carbon dioxide, burn of alcohol.

Aftertaste or finish remains after food is swallowed.

*Examples:* Bitterness; many trigeminal effects, including pungency of ginger, warm burn of cinnamon, cooling of mint.

# Types of Flavorings

Flavoring: An ingredient added to foods primarily for its flavor.

- Herbs and spices.
- Extracts.
- Liqueurs.
- Flavor compounds and bases.
- Flavor oils.
- Flavor emulsions.
- Dried and encapsulated flavorings.

# Types of Flavorings

## Herbs and spices

- Any dried plant part.
- Most, but not all, come from hot, tropical climates.

Plant Part	Example
Bark of tree	Cinnamon
Dried fruit	Allspice, star anise
Seeds	Cardamom, nutmeg, anise
Flower buds	Clove, lavender, rose
Roots	Ginger
Green leaves	Mint, oregano, parsley

# Types of Flavorings





# Types of Flavorings

## Herbs and spices

- Contain high amounts of volatile oils.
  - Also called essential oils.
- Provide
  - Aroma from top notes.
  - Trigeminal effects.
    - Pungency and burn.
- Quality and price depends on amount of volatile oil.
- Disadvantages: can vary in quality, strength, price; can become infested with insects.

# Types of Flavorings

## Extracts

- Contain alcohol.
  - Dissolves, dilutes, and preserves.
- Natural or artificial (imitation).
- Made one of two ways:
  - Flavoring material dissolved directly in alcohol.  
*Examples:* lemon: lemon oil dissolved in alcohol.
  - Flavoring material extracted using alcohol.  
*Example:* vanilla: vanilla beans soaked in alcohol.

# Types of Flavorings

## Vanilla Extract

- By law, a minimum amount of vanilla bean must be used in production.
  - A minimum amount of natural vanillin and alcohol must be present in final extract.
- Quality can vary because beans vary.
  - Cultivation of vanilla beans is labor intensive; practices vary from region to region.
- Commercial extraction process is efficient:
  - one vanilla bean makes about one fluid oz. (30 ml) extract.
  - To substitute between beans and extract in bakeshop:
    - 1 vanilla bean = 1–2 teaspoons (5–10 ml) extract
    - 1 oz extract (30 ml) = 3–6 vanilla beans

# Types of Flavorings

## Vanilla Extract vs. Vanilla Bean

**TABLE 17.1** ADVANTAGES OF VANILLA BEAN AND VANILLA EXTRACT

Vanilla bean	Can select a specific type of bean for a signature flavor
	No alcohol taste
	Can include natural flecks for visual appeal
	Less likely to darken or discolor background color of light sauces
Vanilla extract	Consistent flavor from one use to the next
	Faster and easier to use
	Longer shelf life (often several years)

# Types of Flavorings

## Liqueurs

- Extracts with sugar.
- Natural or artificial ingredients.
- Made from fruits, nuts, seeds, berries, flowers, or their flavorings.
- Some made from neutral grain spirits.

*Example:* crème de menthe and other crèmes are clear and syrupy-sweet.

- Some made from Cognac, brandy, or whiskey.

*Example:* Grand Marnier.

# Types of Flavorings

## Flavor compounds and bases

- Flavorings (natural or artificial) and sugar added to food ingredients, including:
  - Fruit purees.
  - Chocolate.
  - Ground nuts.
  - Ground vanilla beans.
- Essentially, highly flavored food ingredients.
  - Example:* fruit flavored compounds are like highly flavored jams.
- Easy to use.

# Types of Flavorings

**Flavor oils:** Volatile oils purified from plant sources.

*Examples:* peppermint oil, citrus oils.

- Highly concentrated; difficult to use.
- Dissolve in fats/oils but not water.
- Common uses: where liquids are undesirable.
  - Examples: chocolates, boiled confections.

**Flavor emulsions:** Flavor oils dissolved in water through the use of emulsifiers.

- Easier than oils to add to batters and doughs.
  - Most common: lemon, orange emulsions.

# Types of Flavorings

## Dried flavorings

- Not for everyday use.
- Several types of dry vanilla flavors available:
  - Dried vanilla beans: Ground vanilla beans.
  - Pure vanilla powder: Dried vanilla extract.
- Do not contain alcohol.
  - Evaporate less readily during baking.
  - Appropriate for alcohol-free diets (e.g., Halal).
- Vanilla sugar is not a flavoring; it is sugar flavored with just a touch of vanilla.



# Types of Flavorings

## Natural vs. artificial flavorings

- By law,
  - Natural flavorings are labeled *natural* or *pure*.
  - Artificial flavorings are labeled *artificial* or *imitation*.
  - *Exception*: liqueurs are not required by law to be labeled as natural or artificial.
- Not all artificial flavorings are inferior.
  - Flavor profile of imitation almond extract is very similar to that of pure almond extract.

# Types of Flavorings

## Natural vs. artificial flavorings

- Disadvantage of artificial flavorings:
  - Many lack full flavor profile, or flavor complexity.
- Advantages of artificial flavorings:
  - Cost.
  - Many are more resistant to high heat.
    - Artificial vanilla flavorings are generally more stable to heat than vanilla extract.
  - Many have a stronger flavor, useful in strongly flavored products.
    - Artificial vanilla flavoring often useful in chocolate products.

# Evaluating Flavorings

Flavorings cannot be properly judged:

- By price alone.
- By smelling them straight from bottle.

Flavorings that work well in one product might not work as well in another.

*Example:* pastry cream and sponge cake.

Formulas often call for flavorings to be added “to taste.”

- Because different brands of the same flavor can vary.
- Determine correct amount of your brand to use; record, for future use.

# Storage and Handling

Fresh herbs last a few days to two weeks.

- To store: wrap in damp towels or place stems in water; refrigerate.

Dried spices and most other flavorings do not spoil. However,

- Flavor and color slowly degrades.
  - Whole spices last longer than ground.
- Best if used within 3–6 months.
- Dried flavorings can cake and clump.
- To store: keep covered in a cool, dry place.