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## A-level Food and Nutrition

SENIOR Five term 3

### TOPIC 4/4: Beverages

**Competency:** The learner explores various types of beverages, and incorporates them appropriately in the diet for health and wellbeing.

#### Beverages

##### Definition

- According to **Merriam-Webster**, a beverage is *“a drinkable liquid”*.
- The **Cambridge Dictionary** defines it as *“a drink of any type”*, including hot drinks like tea and coffee or cold drinks like juice and soda.
- The **Oxford Dictionary** notes that beverages usually refer to *any type of drink except water*, though in everyday use water is often included

#### Features of Good Beverages

##### 1. Nutritional Value

- **Rich in essential nutrients:** Milk, plant-based alternatives, and fortified drinks provide protein, calcium, vitamins, and minerals.
- **Low in added sugars:** Excess sugar contributes to obesity, diabetes, and dental decay.
- **Balanced calorie content:** Should not add unnecessary calories beyond dietary needs.

##### 2. Hydration Quality

- **Adequate fluid replacement:** Water, herbal teas, and coconut water are excellent for maintaining hydration.
- **Electrolyte balance:** Sports drinks or natural options like coconut water help replenish electrolytes after exercise.

### 3. Functional Benefits

- **Antioxidants:** Tea, coffee, and certain juices contain polyphenols that reduce oxidative stress.
- **Probiotics:** Fermented beverages like kefir and kombucha support gut health.
- **Anti-inflammatory compounds:** Turmeric lattes or ginger teas provide natural healing properties.

### 4. Safety and Quality

- **Free from contaminants:** Should be prepared hygienically and stored properly.
- **Moderate caffeine content:** Avoid excessive stimulation or sleep disruption.
- **Alcohol-free or moderate:** Non-alcoholic options are safer for daily consumption.

### 5. Sensory Appeal

- **Pleasant taste:** Balanced sweetness, acidity, and flavor.
- **Inviting aroma:** Herbal teas, coffee, and spiced drinks enhance sensory enjoyment.
- **Attractive appearance:** Clear, vibrant colors and appealing presentation encourage consumption.

#### Summary Table: Features of Good Beverages

Feature	Description	Examples
<b>Nutritional value</b>	Provides vitamins, minerals, protein	Milk, fortified plant milks
<b>Hydration quality</b>	Maintains fluid balance	Water, herbal teas
<b>Functional benefits</b>	Antioxidants, probiotics, anti-inflammatory	Green tea, kombucha
<b>Safety and quality</b>	Hygienic, moderate caffeine, low alcohol	Pasteurized milk, herbal infusions
<b>Sensory appeal</b>	Pleasant taste, aroma, appearance	Fresh juices, spiced lattes

#### Risks of Poor Beverages

- **Sugary sodas:** Empty calories, obesity, diabetes.
- **Energy drinks:** Excess caffeine, heart palpitations.
- **Alcoholic drinks:** Addiction, liver disease, cancer risk.

## Major Classification of Beverages

### 1. Non-Alcoholic Beverages

- (i) **Water:** The most essential beverage; supports hydration, nutrient transport, and body temperature regulation.
- (ii) **Milk and Plant Milks:** Provide protein, calcium, vitamin D; plant-based options (soy, almond, oat) are useful for lactose-intolerant individuals.
- (iii) **Tea:** Rich in antioxidants (catechins, flavonoids); linked to reduced cardiovascular risk.
- (iv) **Coffee:** Contains caffeine and polyphenols; moderate intake may lower risk of type 2 diabetes.
- (v) **Fruit and Vegetable Juices:** Supply vitamins and antioxidants but are high in natural sugars.
- (vi) **Functional Drinks:** Probiotic beverages, coconut water, fortified waters; marketed for gut health or electrolyte balance.
- (vii) **Soft Drinks and Energy Drinks:** Provide quick energy but are high in sugar or stimulants; linked to obesity and metabolic disorders.
- (viii) **Soups and Broths:** Though often overlooked, they contribute hydration and nutrients.

### 2. Alcoholic Beverages

- (i) **Beer:** Contains carbohydrates and small amounts of B vitamins; excessive intake increases risk of liver disease.
- (ii) **Wine:** Red wine provides polyphenols (resveratrol) with potential heart benefits; moderation is key.
- (iii) **Spirits:** High alcohol concentration, little nutritional value; associated with addiction and chronic disease risk.

### Nutritional Value and Health Impact

Beverage Type	Nutritional Value	Health Impact
Water	Zero calories, essential hydration	Vital for all body functions
Milk/Plant Milks	Protein, calcium, vitamin D	Supports bone health
Tea	Antioxidants, low calories	Reduces cardiovascular risk
Coffee	Caffeine, polyphenols	Boosts alertness, lowers diabetes risk
Fruit Juice	Vitamins, antioxidants	High sugar; best in moderation
Soft Drinks	Sugar, additives	Increases obesity/diabetes risk
Energy Drinks	Caffeine, sugar	Risk of heart issues, anxiety

Wine	Polyphenols	Possible heart benefit; excess harmful
Beer	Carbs, B vitamins	Excess leads to liver disease
Spirits	Alcohol only	High risk of addiction, disease

### Risks and Considerations

- (i) **Sugary beverages** contribute to obesity, diabetes, and dental decay.
- (ii) **Excess caffeine** can cause insomnia, anxiety, and heart palpitations.
- (iii) **Alcohol** increases risk of liver disease, cancer, and dependency when consumed beyond moderate levels.

### Practical Dietary Guidance

- (i) Make **water your primary beverage**.
- (ii) Include **milk or fortified plant-based alternatives** for bone health.
- (iii) Enjoy **tea and coffee in moderation** (2–3 cups/day).
- (iv) Limit **fruit juice to one small glass/day**.
- (v) Avoid **sugary sodas and energy drinks**.
- (vi) If consuming alcohol, follow **moderation guidelines** (e.g., ≤1 drink/day for women, ≤2 for men).

### Examples of Modified Healthier Beverages (with noted modifications)

#### 1. Citrus Mint Infused Water

- **Ingredients:** Water, lemon slices, orange slices, fresh mint leaves.
- **Modification:** Replaces sugary sodas with naturally flavored water.
- **Benefit:** Hydration, vitamin C, refreshing taste without added sugar.

#### 2. Spiced Golden Milk (Turmeric Latte)

- **Ingredients:** Low-fat milk or fortified plant milk, turmeric, ginger, cinnamon, black pepper, honey (optional).
- **Modification:** Uses plant-based milk instead of full-fat dairy; honey instead of refined sugar.
- **Benefit:** Anti-inflammatory properties, calcium, antioxidants.

#### 3. Green Smoothie

- **Ingredients:** Spinach, cucumber, apple, banana, unsweetened yogurt, chia seeds.
- **Modification:** Whole fruits instead of juice; yogurt for probiotics; no added sugar.
- **Benefit:** Fiber, vitamins, gut health support.

## Examples of Hot and Cold Fermented Non-Alcoholic Beverages

### 1. Kombucha (Cold Fermented Tea)

- **Ingredients:** Black or green tea, sugar (for fermentation), SCOBY (symbiotic culture of bacteria and yeast).
- **Preparation:** Brew tea, add sugar, cool, add SCOBY, ferment 7–10 days, refrigerate.
- **Benefit:** Probiotics for gut health, antioxidants.

### 2. Tepache (Cold Fermented Pineapple Drink)

- **Ingredients:** Pineapple peels, brown sugar/panela, cinnamon, water.
- **Preparation:** Combine ingredients, ferment 2–3 days at room temperature, strain, chill.
- **Benefit:** Probiotics, refreshing tropical flavor.

### 3. Kefir (Cold Fermented Milk Drink)

- **Ingredients:** Milk (cow, goat, or plant-based), kefir grains.
- **Preparation:** Add kefir grains to milk, ferment 24–48 hours, strain, refrigerate.
- **Benefit:** Rich in probiotics, calcium, protein.

### 4. Hot Fermented Herbal Tea (e.g., Ginger Ferment)

- **Ingredients:** Ginger root, honey, lemon, water, starter culture (optional).
- **Preparation:** Brew ginger tea, add honey and starter, ferment warm for 1–2 days, serve hot.
- **Benefit:** Digestive aid, immune support.

## Basis of Products Critiquing

When presenting beverages for evaluation:

- **Visual Appeal:** Serve in clear glassware to highlight colors and textures.
- **Labeling:** Note modifications (e.g., “Reduced sugar,” “Fortified with probiotics”).
- **Sensory Evaluation:** Invite critique on **appearance, aroma, taste, mouthfeel, and aftertaste.**
- **Nutritional Notes:** Provide a short card with calorie count, sugar content, and key nutrients.

**Thank You**

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