Minor components: (1) ***organic acids***

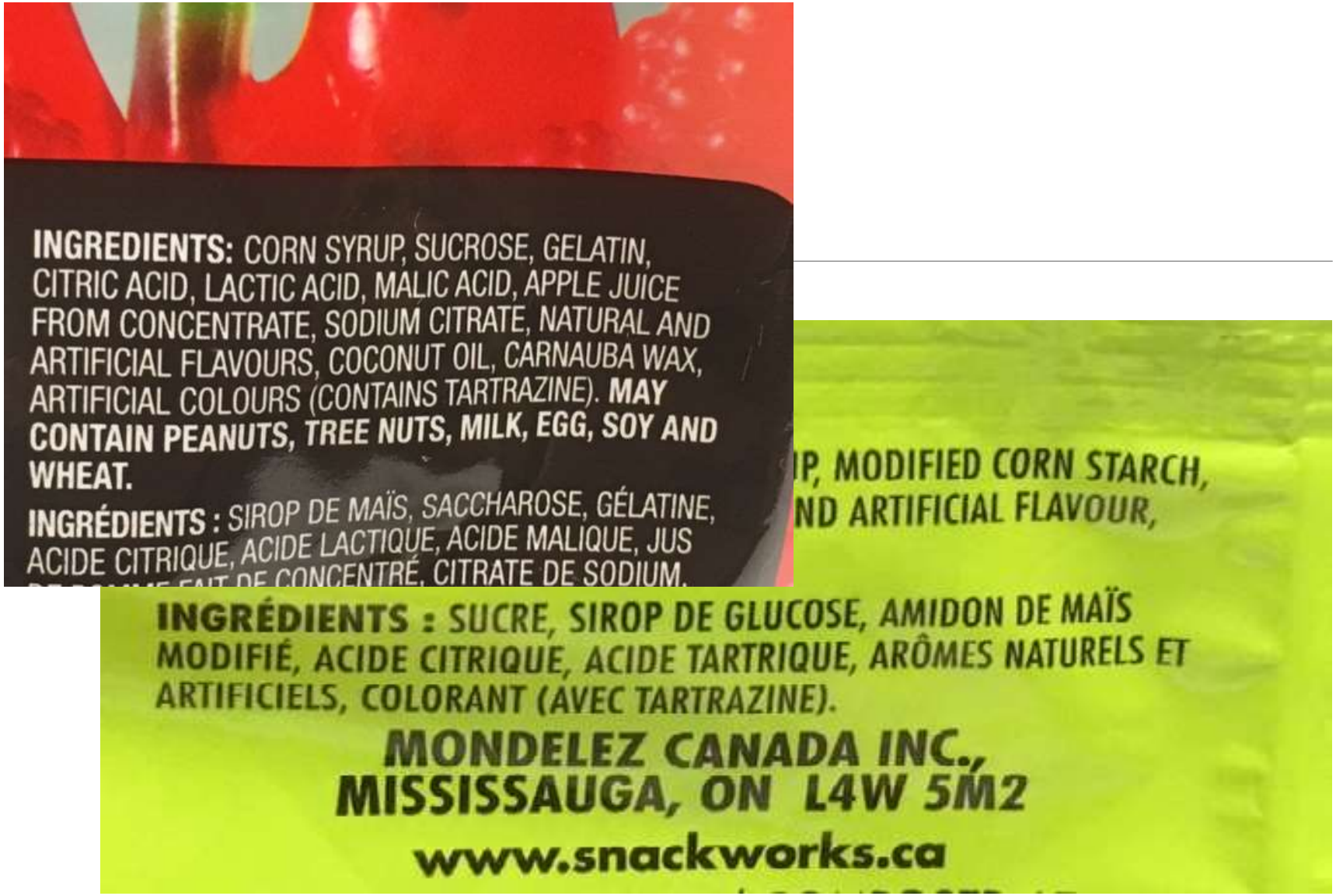
1. Organic acids- functions in foods

- impart flavour and tartness
- Some used as *antimicrobial agents*
- **adjust pH** or **acidity** of food (acidulants)

1. Organic acids-

- **Examples**:
  - malic acid (apples)
  - citric acid (citrus fruits, tomatoes, strawberries)
  - tartaric acid (grapes)
  - lactic acid (yogurt, cheese, olives, sauerkraut)

Ingredients list: sugar, glucose syrup, modified corn starch, lactic acid, citric acid, tartaric acid, artificial flavour, colour (with tartrazine)


INGREDIENTS: CORN SYRUP, SUCROSE, GELATIN, CITRIC ACID, LACTIC ACID, MALIC ACID, APPLE JUICE FROM CONCENTRATE, SODIUM CITRATE, NATURAL AND ARTIFICIAL FLAVOURS, COCONUT OIL, CARNAUBA WAX, ARTIFICIAL COLOURS (CONTAINS TARTRAZINE). MAY CONTAIN PEANUTS, TREE NUTS, MILK, EGG, SOY AND WHEAT.
INGRÉDIENTS : SIROP DE MAÏS, SACCHAROSE, GÉLATINE, ACIDE CITRIQUE, ACIDE LACTIQUE, ACIDE MALIQUE, JUS
P, MODIFIED CORN STARCH,
ND ARTIFICIAL FLAVOUR,
INGRÉDIENTS : SUCRE, SIROP DE GLUCOSE, AMIDON DE MAÏS MODIFIÉ, ACIDE CITRIQUE, ACIDE TARTRIQUE, ARÔMES NATURELS ET ARTIFICIELS, COLORANT (AVEC TARTRAZINE).
MONDELEZ CANADA INC.,
MISSISSAUGA, ON L4W 5M2
www.snackworks.ca

1.Organic acids- determining acidity

One simple method is to:

TASTE it!

A sour or acidic taste is a positive indicator.

- highly subjective (sensitivity varies between individuals)

1.Organic acids- determining acidity

using a pH meter

measure the H^+ concentration

then converted to a pH value.

1. Organic acids- pH

❖**What is pH?**
- The measure of the acidity

pH ranges from 0 (*very acidic*) to 7 (*neutral*) to 14 (very alkaline)

- What is the importance of pH in foods?
  - determines the rate of chemical & enzymatic reactions
  - Microbial growth/survival in foods

- pH value of **4.6** –critical to the **Food industry**
- borderline between: ”Acid & Low-acid foods”

1. Organic acids- pH

- Acidic or **acid foods** (***pH < 4.6***)
  - eg. citrus juices, apple juice, strawberries, apples
  - Will not support growth of **most** **disease-causing** microorganisms.

- **Low-acid foods** (***pH > 4.6***)
  - eg. meat, fish, vegetables

Products	pH value	Acidity classification
Meat, fish, poultry	7.0	Low acid (pH > 4.6)
Milk	6.5	
Corn	6.3	
Wheat flour	6.0	
Potatoes, peas	5.8	
Carrots	5.1	
Figs	5.0	
Garlic	5.8	
Apples	3.7	Acid (pH 0 - 4.6)
Cherries	3.6	
Oranges, pears, tomatoes	3.5	
Pickles	3.0	
Lemon/lime juice	2.3	

Total Acidity vs. pH

- The two concepts are different
- Total acidity **(titratable acidity)** measures the total acid concentration
- pH quantifies H^+ concentration **(active acidity)**

Minor components: (2) ***Colours and Pigments***

2. Colours & Pigments

- Naturally occur. in the foods
- extracted from natural or synthetic sources- added to foods.

- Review different class of pigments- Lesson 2…
  - **Carotenoids**
    - Red colour, in tomatoes (lycopene)
    - Orange colour in carrots (beta carotene)
  - **Anthocyanins**
    - blueberries, cherries, cranberries, plums and red cabbage
  - **Chlorophyll**

Minor components: (3) ***Aroma & Taste compounds***

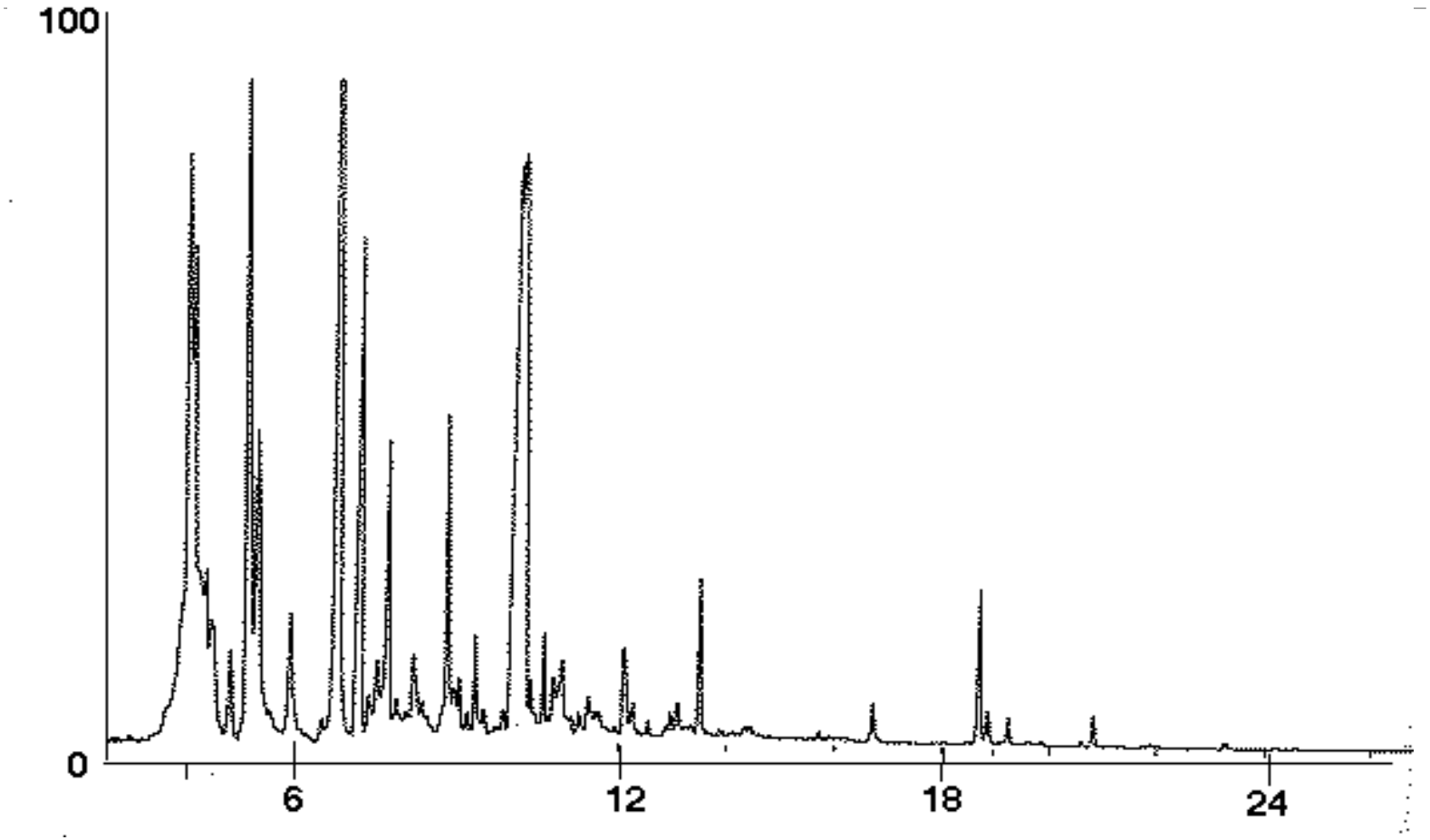
3. Aroma & Taste compounds…

- **Aroma** and **taste** profiles of foods = **FLAVOUR**
  - complex – 100s or 1000s of compounds,
    - e.g. aldehydes, ketones, acids, alcohols, fatty acids
  - Aroma: volatile compounds
  - Taste: non-volatile

Table in *Less. 2* for diversity of compounds → aroma of COFFEE

  - present as part of the food matrix (eg strawberries), or
  - modified (eg cooked strawberries)

Chromatogram of Regular Caffeine Coffee 1.5 mg. Thermal Analysis 250 deg. C for 6 minutes



Minor components: (4) **Vitamins & Minerals**

4. Vitamins & Minerals

- **No effect** on flavour, colour, texture of food (in the amount appeared in food)
- low amounts in the diet- maintain health

- Water soluble vitamins
  - Vitamin C, B complex, folic acid
- Fat soluble vitamins
  - Vitamins A, D, E, K
- Some used as food additives: Preservatives (antioxidants)
- Minerals e.g. Ca, Mg, Na, K, Fe, Zn … added as their salt