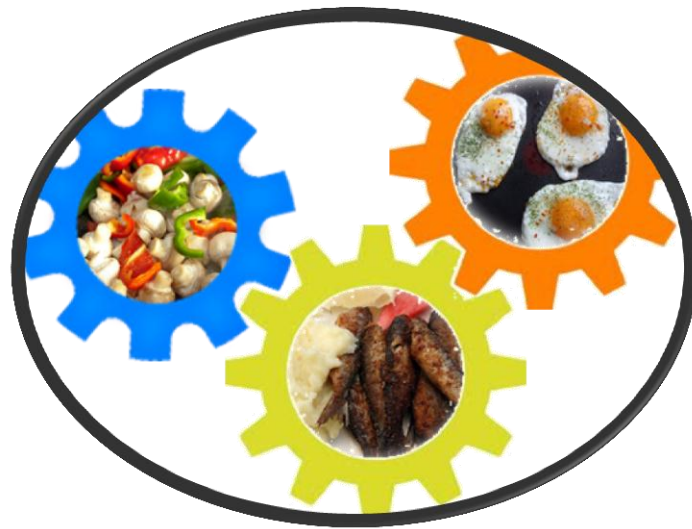


---

## HEALTHY EATING GUIDELINES FOR DIETARY DISORDERS

---



**After completing this section, you will be able to:**

- Describe the human digestive system
- List common dietary disorders
- Identify ingredients relevant to special dietary needs to include low calorie diets, low cholesterol diets, nut and other allergies, vegetarians, diabetics and coeliacs

---

## Healthy Eating Guidelines for Dietary Disorders

---



### Vocabulary

absorption	amylase	anus
chyme	digestion	digestive system
digestive juices	enzymes	intestines
liver	mouth	oesophagus
pancreas	peristalsis	small intestine
stomach	teeth	saliva





# Digestion

Digestion is the break down of the macronutrients eaten and converting them into energy in the body

**Physical and and chemical changes during digestion:**

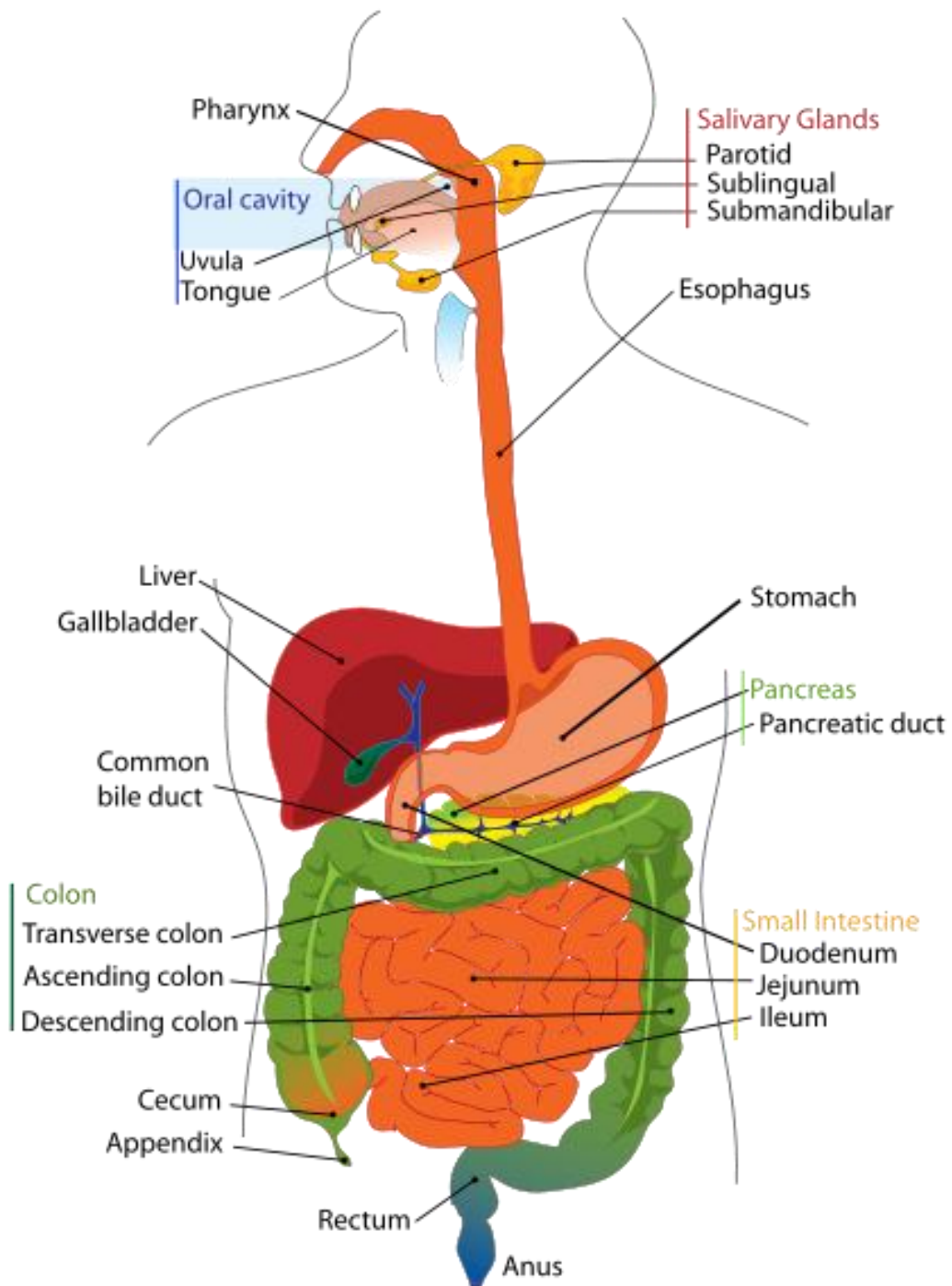
Physical changes	Chemical changes
Physical changes occurs when food is chewed by the teeth in the mouth	Chemicals called enzymes break down large food units into smaller ones
Food is mixed with saliva in the mouth	An enzyme is a chemical that causes a reaction without itself changing.
Food is churned in the stomach	An enzyme is like a pair of scissors that cuts the links between the units.
Fat melts in the stomach	The body makes many enzymes and each enzyme controls a different chemical reaction in the body.
	There are a number of enzymes involved in digestion.

**As food moves through the digestion system it changes:**

- protein to amino acids,
- carbohydrates to glucose,
- fats to glycerol and fatty acids.
- Cellulose or dietary fibre is used to keep macro food nutrients moving through the digestive system.
- Micronutrients – vitamins and minerals are easily absorbed by the body due to their small size.

## Section 2

The diagram below shows body parts and some related organ for digestive disorders:



### **The Digestive System**

The digestion system is a long tube that starts in the mouth and ends at the anus. The food is squeezed along this tube by muscles in the walls of the digestive tube. This action is called peristalsis.

### **Parts of the digestive system**

#### **Mouth:**

Digestion starts in the mouth when food is chewed and mixed with the digestive juice saliva, making food easier to swallow and digest later.

The enzyme, amylase, in the saliva starts to break down starch.

#### **Oesophagus(gullet):**

The oesophagus is a muscular tube about 25cm long. It carries food from the throat to the stomach. The food is pushed down the throat by the muscular action of peristalsis. When the food reaches the top of the stomach the sphincter muscle opens and the food goes into the stomach and muscle squeezes shut to prevent the food going back up into the oesophagus.

#### **Stomach:**

The stomach is a pouch shaped bag with muscular walls which expands when food enters it.

The stomach-

- Churns the food mixing it with digestive juices containing enzymes. It is broken down into a liquid called chyme.
- Fat melts because of the heat of the stomach. This makes digestion easier.
- Digestive juices start to break down proteins
- Any harmful bacteria in the food is killed by hydrochloric acid.

Food stays in the stomach for 1- 4 hours. The food then passes into the small intestine.

### **Small Intestine:**

The food moves slowly from the stomach into the top of the small intestine which is called the duodenum. The small intestine is a narrow long twisted tube about 6 meters in length. It is called small because it is narrow in width. Most of the breakdown of food happens in the duodenum.

The pancreas and gall bladder send enzymes to help in the breakdown process.

The juices contain three enzymes that

- Change protein to amino acids.
- Change starch into sugars
- Assist bile in the breakdown of fats.

The digested food then passes through the wall of the small intestine into the bloodstream by absorption.

Absorption happens mainly in the small intestine. Absorption is the passing of digested food into the bloodstream. The blood carries the digested nutrients to all the cells in the body where they are used for energy and to make and repair body cells.

Any undigested food nutrients pass into the large intestine.

### **Large Intestine:**

The large intestine is an inverted U shaped tube about 2 meters in length that sits over the coiled small intestine. It is also called the bowel. The appendix is a small sac located near the start of the large intestine.

Food that is undigested passes from the small intestine into the large intestine. As the undigested food passes through the large intestine water and salts are removed, vitamins B and K are manufactured and returns these substances to the bloodstream. After water is absorbed the remaining waste is in solid form called faeces.

The last few centimeters of the large intestine is the rectum which has strong muscles. It stores and then assists in removing waste through the anus, the opening at end of the rectum.

Bacteria are present in faeces so it is important that hands are washed thoroughly after using the toilet.

## Section 2



### Activity

Find and circle each of the words from the list below:

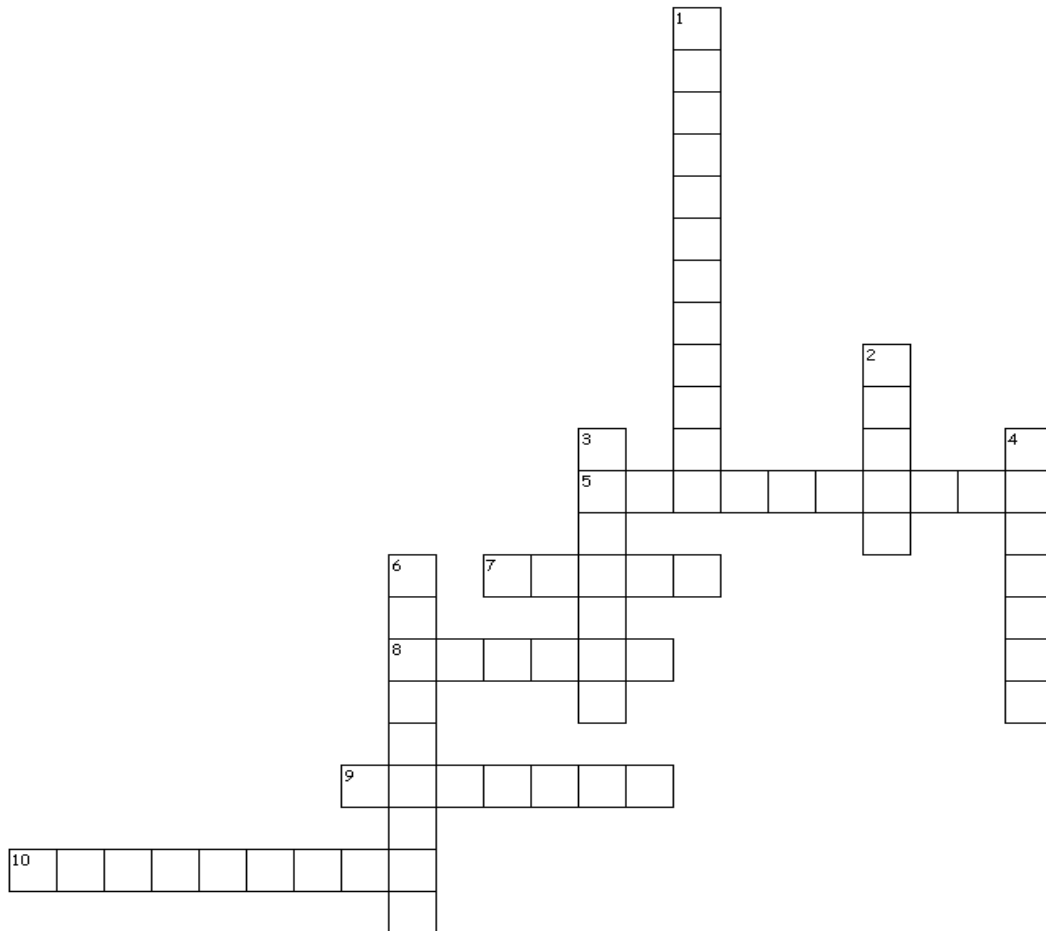
Q K Z Z U V B Q U W S Y S P V D  
 M X L V L R R T C U J Y W H P I  
 P S B A O L K Y G M B S B A A I  
 K X S S E W U A V M L S F R N Z  
 L O B M W A H M U D A W Q Y C T  
 I A T Z A P K T J T R A F N R Z  
 V N I O O L C X W S G L I X E V  
 E U M S N E L T X T E L L T A K  
 R T E G R G S I X O I O T W S F  
 C R M G P E U P N R N W E R I W  
 S I K S G H E E X T T M R Z F T  
 T E F I T T L I Q Y E N O N J Q  
 X N D Z E O D R B U S S I U Q Z  
 Q T U R S N M W C G T B T E T M  
 B S C C E F E A Y K I Z F I V H  
 O X V P A H C L C T N Q W F N N  
 E X P N C Y R V S H E X D F R E  
 D A S A L I V A H I F T E E T H

<i>absorb</i>	excrete	nutrients	small intestine
<i>appendix</i>	filter	pancreas	stomach
<i>chew</i>	large intestine	pharynx	swallow
<i>digest</i>	liver	rectum	teeth
<i>oesophagus</i>	mouth	saliva	tongue



### Activity

Complete the puzzle using the clues below:



#### Across

5. The movement of food to the blood stream.
7. The number of times we should brush our teeth
8. It carries food from mouth to stomach.
9. Here food is mixed with digestive juice.
10. The number of adult teeth.

#### Down

1. The squeezing of food along the digestive system.
2. The part of the digestive system where food is chewed and mixed with saliva.
3. Tearing teeth.
4. They control chemical reaction in the body.
6. The breaking down of food.

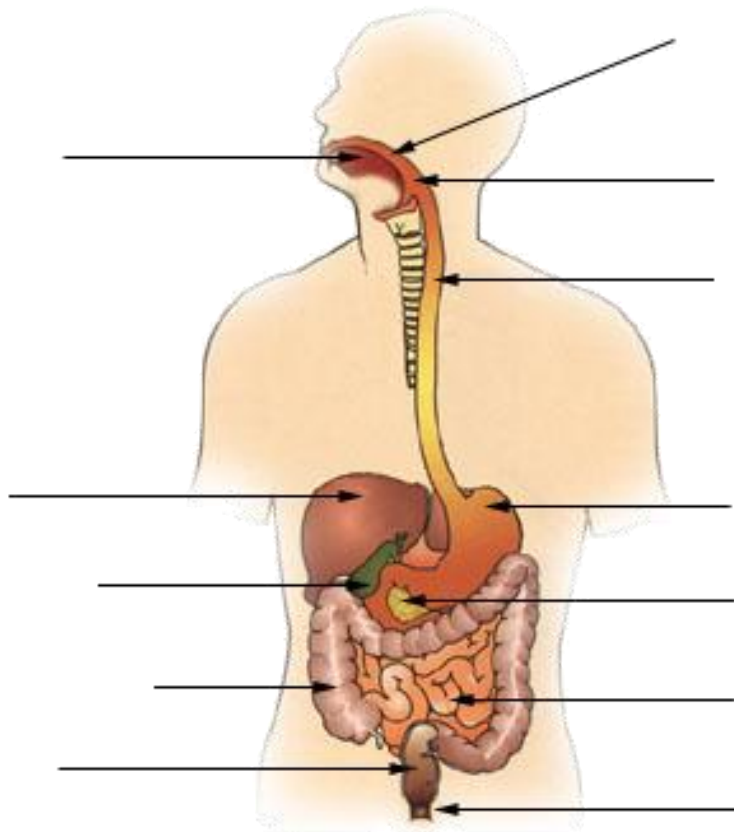


## Section 2



### Activity

Label the parts of the human digestive system:



appendix	rectum
oesophagus	small intestine
large intestine	stomach
liver	teeth
pharynx	tongue

### Impact of food processing on nutritional value

- Food is processed to extend its shelf life, have foods available out of season and to reduce the loss of nutrients.
- Fresh meat packed in vac packaging has little effect on the nutritional value as it is a method of food preservation.
- Meat and fish products lose B group of vitamins and some minerals during slow freezing up to -24 °C. Freezing foods on fast freeze over -25°C has no loss of nutrients.
- During commercial canning of fish the bones are softened making fish a valuable source of calcium.
- During processing of wheat vitamins and minerals lost during the heating process are fortified with required nutrients including calcium and vitamin C are at the end of the process

### Impact of preparation on nutritional value

- White fish contain only trace amounts of fat found in the liver this is removed during preparation.
- During preparation of fruit and vegetables use a sharp knife to cut them as a blunt knife will tear the cells which releases an enzyme that will destroy nutrients.
- Vitamin C is the most unstable of all the vitamins and is easily lost. If vitamin C is steeped in water or exposed to air such as steeping cabbage or leaving a slice of orange exposed to air.
- Avoid steeping vegetables and fruit in liquid as there will be loss of water soluble vitamins.
- Steaming maintains nutrients, as there is no direct water contact.

### Impact of cooking on nutritional value

- When cooking fresh meat there is a loss of B group vitamins as well as some minerals.
- Fish poached in water, soluble vitamins and minerals seep into the cooking liquid.
- When cooking eggs and milk there is a loss of B group vitamins especially thiamine.
- There is little loss of nutrients when cooking with cheese
- When cooking vegetables water soluble vitamins and minerals dissolve into the cooking water. Vitamin C and B1 are lost due to high temperatures. Avoid overcooking to reduce vitamin loss. Prepare just before cooking to maintain nutrients.
- When stewing foods all nutrients are kept as the liquid used in cooking is also eaten.



## Section 2