# SMALL INTESTINE

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# FUNCTIONAL ANATOMY

- Small intestine is the part of gastrointestinal (GI) tract, extending between the **pyloric sphincter** of stomach and **ileocecal valve,** which opens into large intestine.
- It is called small intestine because of its **small diameter**, compared to that of the large intestine.
- **But it is longer than large intestine**.
- Its length is about 6 meter.
- Important function of small intestine is **absorption** Important function of small intestine is absorption.
- **Maximum absorption** of digested food products takes place in small intestine.

- Small intestine consists of three portions:
  1. Proximal part known as **duodenum**
  2. Middle part known as **jejunum**
  3. Distal part known as **ileum**.

- Wall of the small intestine has all the four layers as in **stomach**.

# INTESTINAL VILLI

- Mucous membrane of small intestine is **covered by minute projections** called villi.
- The **height** of villi is about 1 mm
- The **diameter** is less than 1 mm.

# PROPERTIES OF SUCCUS ENTERICUS

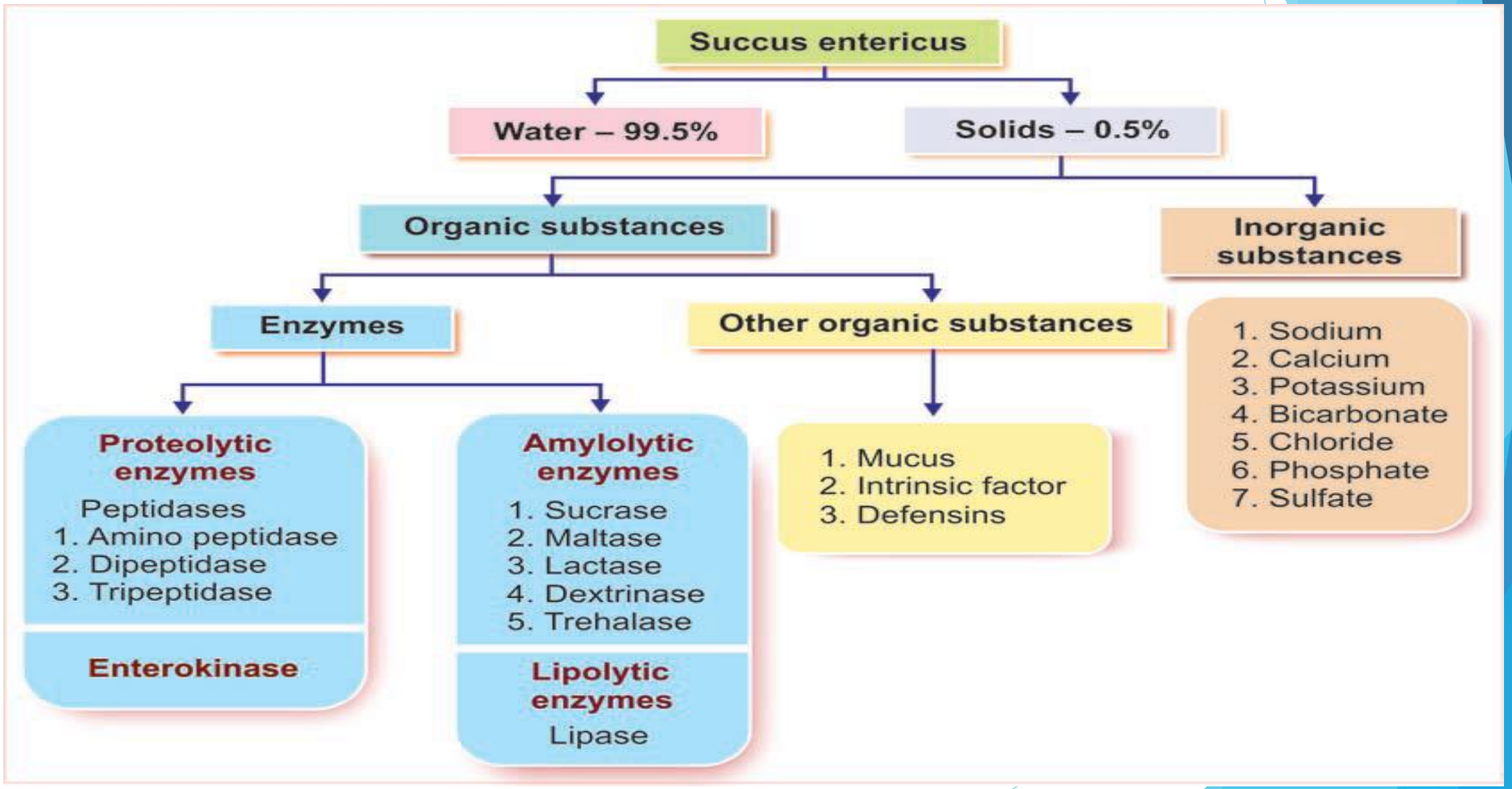
- Secretion from small intestine is called succus entericus.

**Volume** : 1800 mL/day

**Reaction** : Alkaline

**pH** : 8.3

# COMPOSITION OF SUCCUS ENTERICUS



# FUNCTIONS OF SUCCUS ENTERICUS

## *1. Digestvie Function*

- ***Proteolytic Enzymes***

**Peptidases:** Peptides → Amino acids

- ***Amylolytic Enzymes***

**Sucrase:** Sucrose → Fructose and glucose

**Maltase:** Maltose and maltriose → Glucose

**Lactase:** Lactose → Galactose and glucose

**Dextrinase:** Dextrin, maltose and maltriose → Glucose

- ***Lipolytic Enzyme***

**Intestinal lipase:** Triglycerides → Fatty acids

## 2. PROTECTIVE FUNCTION

i. **Mucus** present in the succus entericus protects the intestinal wall from the acid chyme, which enters the intestine from stomach; thereby it prevents the **intestinal ulcer.**

ii. **Defensins** secreted by paneth cells of intestinal glands are the **antimicrobial peptides.**

- These peptides are called natural peptide antibiotics because of their role in killing the phagocytosed bacteria.

## 3. ACTIVATOR FUNCTION

- Enterokinase present in intestinal juice activates trypsinogen into trypsin.

## 4. HEMOPOIETIC FUNCTION

- **Intrinsic factor of Castle** present in the intestine plays an important role in **erythropoiesis**.
- It is necessary for the **absorption of vitamin B12**

## 5. HYDROLYTIC PROCESS

- Intestinal juice helps in all the enzymatic reactions of digestion.

# FUNCTIONS OF SMALL INTESTINE

## 1. MECHANICAL FUNCTION

- Mixing movements of small intestine help in the thorough mixing of chyme with the digestive juices like succus entericus, pancreatic juice and bile.

## 2. SECRETORY FUNCTION

- Small intestine secretes succus entericus, enterokinase and the GI hormones.

## 3. HORMONAL FUNCTION

- Small intestine secretes many GI hormones such as secretin, cholecystokinin, etc.
- These hormones regulate the movement of GI tract and secretory activities of small intestine and pancreas.

## 4. DIGESTIVE FUNCTION

- Refer functions of succus entericus.

## 5. ACTIVATOR FUNCTION

- Refer functions of succus entericus.

## 6. HEMOPOIETIC FUNCTION

- Refer functions of succus entericus.

## 7. HYDROLYTIC FUNCTION

- Refer functions of succus entericus.

# 8. ABSORPTIVE FUNCTIONS

- Presence of **villi** and **microvilli** in small intestinal mucosa **increases the surface area of mucosa.**
- This facilitates the absorptive function of intestine.
- Digested products of foodstuffs, proteins, carbohydrates, fats and other nutritive substances such as vitamins, minerals and water are absorbed mostly in small intestine.
- From the lumen of intestine, these substances pass through lacteal of villi, cross the mucosa and enter the blood directly or through lymphatics.

# *THANK YOU*