The **pancreas** aids chemical digestion by producing an alkaline solution rich in bicarbonate as well as several enzymes. The bicarbonate neutralises the acidity of chyme and acts as a buffer.

Bile production by the liver

Digestion of fats and other lipids begin in the small intestine and relies on the production of **bile**, a mixture of substances that is made in the **liver**. Bile contains bile salts, which act as emulsifiers (detergents) that aid in digestion and absorption of lipids. Bile is stored and concentrated in the **gallbladder**.

Secretions of the small intestine

The epithelial lining of the duodenum is the source of several digestive enzymes. While enzymatic hydrolysis proceeds, peristalsis moves the mixture of chyme and digestive juices along the small intestine. Most digestion is completed in the duodenum. The remaining regions of the small intestine called the jejunum and ileum are the major sites for absorption of nutrients as discussed next.

Absorption in the small intestine



To reach body tissues, nutrients in the lumer must for the absorbed across the lining of the alimentary canal. Most of this absorption occurs at the highly folded surface of the small intestine. Large fold first @ ming encircle the intestine and are studded with fingerlike projection added villi. In turn, each pithetial cell of a bills has on its apical surface many nucleoscopic projection (creation villi), that are exposed to the intestinal lumen.

From there, fructose exits the basal surface and is absorbed into microscopic blood vessels, or capillaries, at the core of each villus. Other nutrients, including amino acids, small peptides, vitamins and most glucose molecules, are pumped against concentration gradients into the epithelial cells of the villus. The capillaries and veins that carry nutrient-rich blood away from the villi converge into the **hepatic portal vein**, a blood bessel that leads directly to the liver.

Although many nutrients leave the small intestine through the bloodstream, some products of fat (triglyceride, also known as triacylglycerol) digestion take a different path. Hydrolysis of fats by lipase in the small intestine generates fatty acid joined to glycerol) These products are absorbed by epithelial cells and recombined into triglycerides. They are then coated with phospholipids, cholesterol, and proteins, forming globules called **chylomicrons.** Being water soluble, chylomicrons can dissolve in the blood and travel via the circulatory system.

Before reaching the bloodstream, chylomicrons are first transported from an epithelial cell in the intestine into a **lacteal**, a vessel at the core of each villus. Lacteals are part of the vertebrate lympathic system, which is a network of vessels filled with a clear fluid