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Matric number-16/mhs06/063

Course-MLS 408

ASSIGNMENT

1.In tabular form only, compare and contrast sections of the gastrointestinal tract

ANSWER

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Radial organization of gastrointestinal tract  wall of tubular gastrointestinal tract consists of 4 concentric layers:  I)mucosa  epithelium  Typically a simple cuboidal or a simple columnar epithelium  secretory function in stomach  secretory and absorptive functions in small intestine and large intestine  II)lamina propria  supports avascular mucosal epithelium  contains blood and lymphatic vessels  iii) muscularis mucosae  Typically, a double layer of smooth muscle  inner layer of circularly oriented smooth muscle  outer layer of longitudinally oriented smooth muscle  contraction causes local movement in mucosa  iv)submucosa  a layer of connective tissue  contains large blood vessels and large lymphatic vessels  contains submucosal (Meisnner's) nerve plexus  anchors the mucosa to the muscularis externa  v)muscularis externa  a double layer of smooth muscle  inner layer of circularly oriented smooth muscle  outer layer of longitudinally oriented smooth muscle  contains myenteric (Auerbach's) nerve plexus in between double layer of smooth muscle  contraction causes peristalsis  adventitia / serosa  a layer of connective tissue  Distinctive Features of the Gastro intestinal Tract   |  |  | | --- | --- | | 1)ORAL | Mucosa- A lining epithelium, including glandular tissue, an underlying layer of loose connective tissue called the lamina propria, which provides vascular support for the epithelium, and often contains mucosal glands. Products of digestion pass into these capillaries. Lymphoid follicles, and plasma cells are also often found here. Finally, a thin double layer of smooth muscle is often present - the muscularis mucosa for local movement of the mucosa.  Submucosa- A loose connective tissue layer, with larger blood vessels, lymphatics, nerves, and can contain mucous secreting glands.  Muscularis propria (externa): smooth muscle layer-There are usually two layers; the inner layer is circular, and the outer layer is longitudinal. These layers of smooth muscle are used for peristalsis (rhythmic waves of contraction), to move food down through the gut.  Adventia layer (or serosa)- outermost layer of loose connective tissue - covered by the visceral peritoneum. Contains blood vessels, lymphatics and nerves. | | 2)Esophagus | esophageal mucosa  - non-keratinizing, stratified squamous epithelium  -muscularis mucosae is a single layer of longitudinally oriented smooth muscle  esophageal muscularis externa  - upper one third of esophagus  -striated muscle  -middle one third of esophagus  -striated muscle and smooth muscle  lower one third of esophagus  -smooth muscle | | 3) THE STOMACH | gastric mucosa  -gastric glands occupy gastric mucosa  -simple, branched, tubular glands that extend from muscularis externa to bottom of gastric pits  -consist of mucus neck cells, parietal cells, chief cells, and G cells  -elaborate gastric secretions into lumen of stomach via gastric pits | | 4)Small Intestine | Overview  small intestinal mucosa  -exhibits numerous projections, or villi, that protrude from epithelial layer of mucosal surface  -villi increase surface area over which digestion and absorption occurs  -epithelial layer of small intestinal mucosa is heterogeneous, composed of:  -mucus-secreting cells (goblet cells)  -absorptive cells (enterocytes)  -exhibit numerous projections, or microvilli, that protrude from apical border  -microvilli increase surface area over which digestion and absorption occurs  -microvilli are responsible for characteristic striated border, or brush border, of enterocytes  -frequency of villi and of microvilli in small intestine  -jejunum > duodenum and ileum  -frequency of goblet cells in small intestine increases as you progress down the small intestine  -duodenum < jejunum < ileum | | 5)duodenum | duodenal mucosa  -crypts of Lieberkühn, or intestinal glands, occupy duodenal mucosa  -simple tubular glands that extend from muscularis externa to base of villi  -elaborate small intestinal secretions into lumen of duodenum  duodenal submucosa  -Brunner's glands, or submucosal glands, occupy duodenal submucosa  -elaborate alkaline (basic pH) secretions  -likely function to neutralize acidic chyme propelled from stomach to duodenum of small intestine  -peptic ulcer disease presents with hypertrophy of Brunner's glands | | 6)jejunum | jejunal mucosa  -crypts of Lieberkühn, or intestinal glands, occupy jejunal mucosa  jejunal submucosa  -plicae circulares are circularly arranged transverse folds containing a core of submucosa that extend partially around jejunal lumen | | 7)ileum | ileal mucosa  -Peyer's patches, or aggregations of nodules of unencapsulated lymphatic tissue, occupy ileal lamina propria (and ileal submucosa)  -M cells, overlying Peyer's patches, function as antigen-transporting cells  -take up microorganisms and macromolecules  -deliver antigens to antigen-processing macrophages  -macrophages present processed antigen to lymphocytes  -triggers secretory immunity  -stimulates B cells in germinal centers of Peyer's patches to differentiate into IgA-secreting plasma cells that reside in ileal lamina propria  -crypts of Lieberkühn, or intestinal glands, occupy ileal mucosa  ileal submucosa  -plicae circulares are circularly arranged transverse folds containing a core of submucosa that extend partially around ileal lumen (proximal ileum)  -increase surface area over which absorption occurs | | 8)Large intestine | colon  colonic mucosa  -"smooth" surface devoid of villi  -crypts of Lieberkühn, or intestinal glands, occupy colonic mucosa  colonic muscularis externa  -outer layer of longitudinally oriented smooth muscle is organized into 3 bundles, or teniae coli | | 9)anal canal | anal canal mucosa  -keratinizing, stratified squamous epithelium | |

SIMILARITES

I)They all have four distinct layers

Mucosa -- innermost layer (closest to the lumen), the soft, squishy lining of the tract, consisting of epithelium, lamina propria, and muscularis mucosae. Submucosa -- connective tissue supporting (outside, deep to) the mucosa.

Muscularis externa -- muscular wall of the tract, surrounding (outside, deep to) the submucosa.

Adventitia / serosa -- outermost layer (deepest, farthest from the lumen) is called either adventitia (in regions where the tube passes through the body wall) or serosa (in regions where the tube passes through body cavities).

2)They are stained with Hematoxylin and Eosin