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Large Intestine

Thursday, January 17, 2008
11:00 AM

1. Describes the function of the colon.
 - a. Storage
 - b. Absorption of salt and water
 - c. Digestion and absorption of other stuff
 - d. Excretion
2. States the mechanism of colonic absorption of salt and water.
 - a. Absorbs salt --> 1.5 l/day of water
 - b. Na⁺ absorption in proximal colon is by Na⁺-H⁺ exchange in apical membrane coupled to Cl⁻-HCO₃⁻ exchanger
 - c. In distal colon, electrogenic Na⁺ absorption via amiloride sensitive sodium channel
 - i. Regulated by aldosterone
 - ii. When Na⁺ deficient, Na⁺ retention in colon is very efficient
 - d. Na⁺ entering cells is pumped out via Na⁺/K⁺ ATPase (ouabain inhibited) or secreted by crypts on basolateral membranes
 - e. K⁺ also pumped out basolaterally via channel
 - f. HCl
 - g. Colonic H⁺/K⁺ ATPase in distal colon to secrete H⁺/absorb K⁺
 - h. Water is probably absorbed via aquaporins
 - i. Colon can absorb up to 4400 ml/day; excretes at least 100 ml/day
 - ii. Small intestinal disease can lead to diarrhea b/c too much water coming in from small intestine
 - iii. Colonic disease may result in net secretion of water --> diarrhea
3. States the mechanism of colonic potassium and bicarbonate secretion.
 - a. See 2
4. States the effects of aldosterone on sodium and potassium transport across the colonic epithelium.
 - a. See 2c
5. Defines "dietary fiber."
 - a. Dietary fiber is mainly carbohydrates that we cannot digest
 - b. Increases stool weight
 - c. Decreases transit time
6. Describes the role of colonic bacterial metabolism in gas formation (flatus).
 - a. Intestinal bacteria ferment carbohydrates --> H₂ gas, SCFA
 - b. Bacteria metabolize bile acids and Vit K
 - c. Ingestion of certain foods rich in indigestible carbohydrates increases flatus
 - d. More anaerobic bacteria than aerobes; more total bacteria than small intestine
7. Describe the production and absorption of short chain fatty acids in the colon.
 - a. Produced from carbohydrates by colonic bacteria
 - b. Absorbed by colonic mucosa