

Possible Role of Hydrogen Sulfide (H₂S) in Ulcerative Colitis

Toxicity of H₂S

20 ppm is irritating to eyes and bronchial mucosa

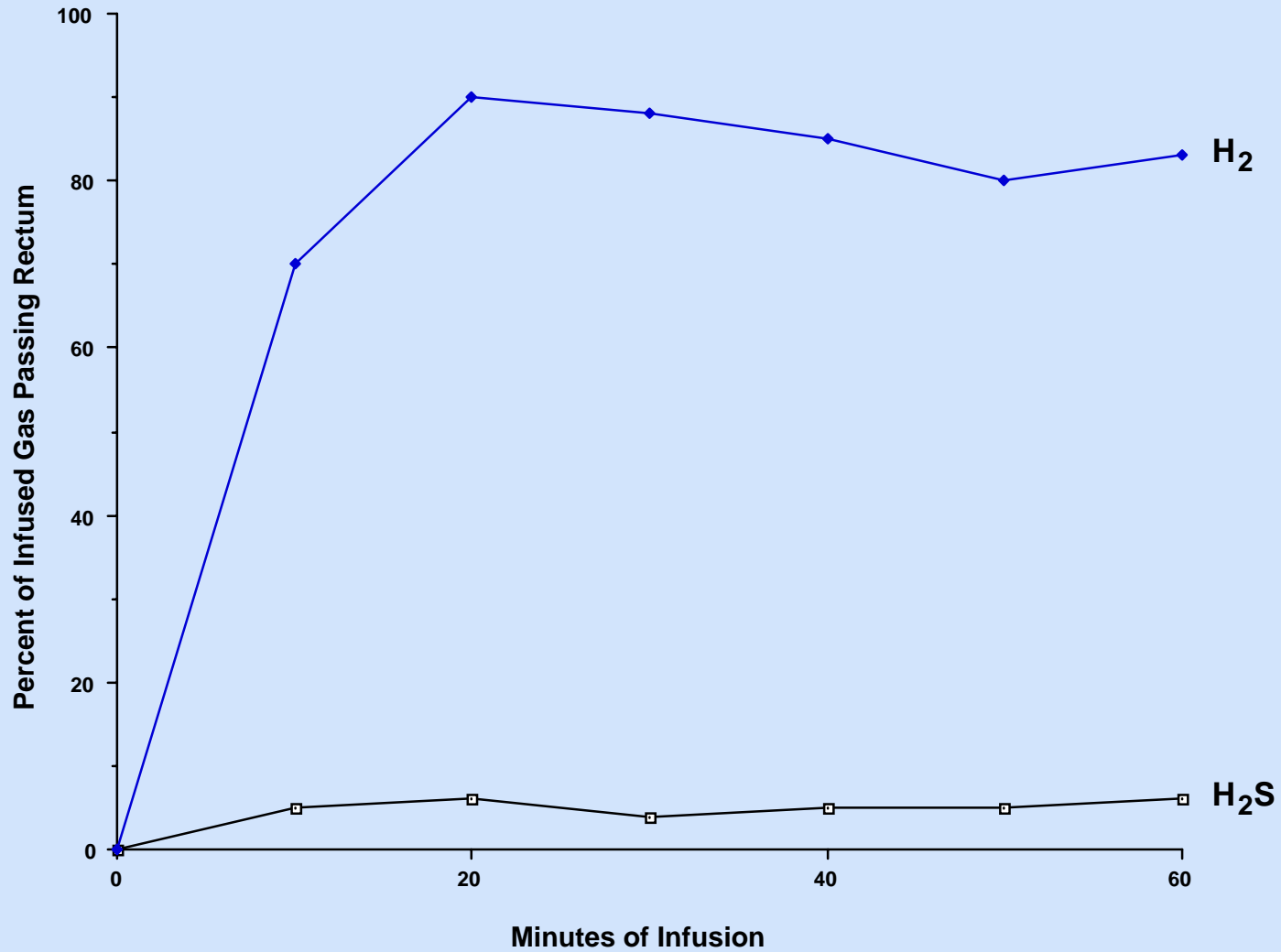
100 ppm requires immediate building evacuation

500 ppm is lethal in one hour

Cecal concentration: up to 4,000 ppm!!!



Rectal Recovery of Gases Infused at the Cecum of the Rat

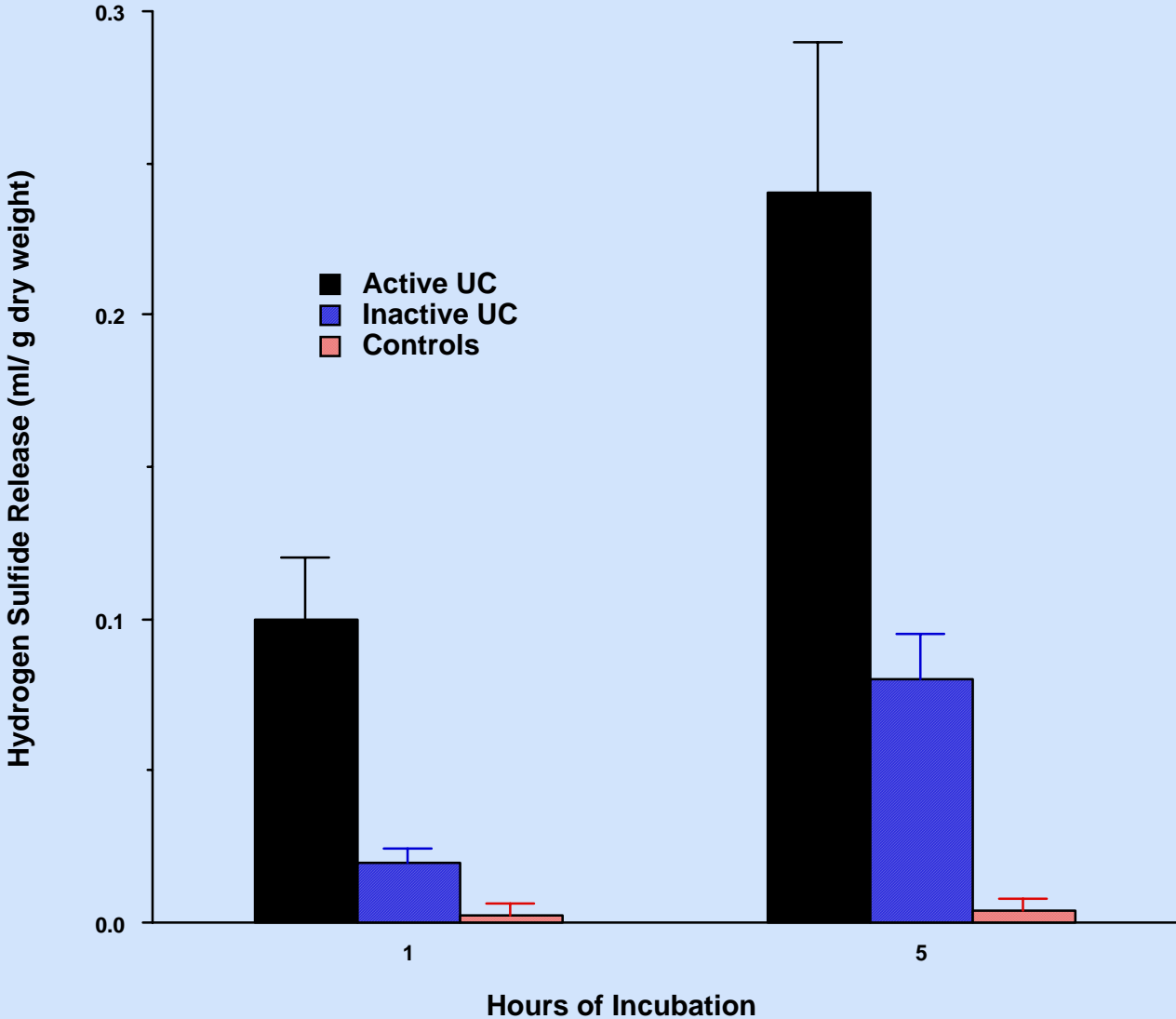


Forms of Sulfide in Feces

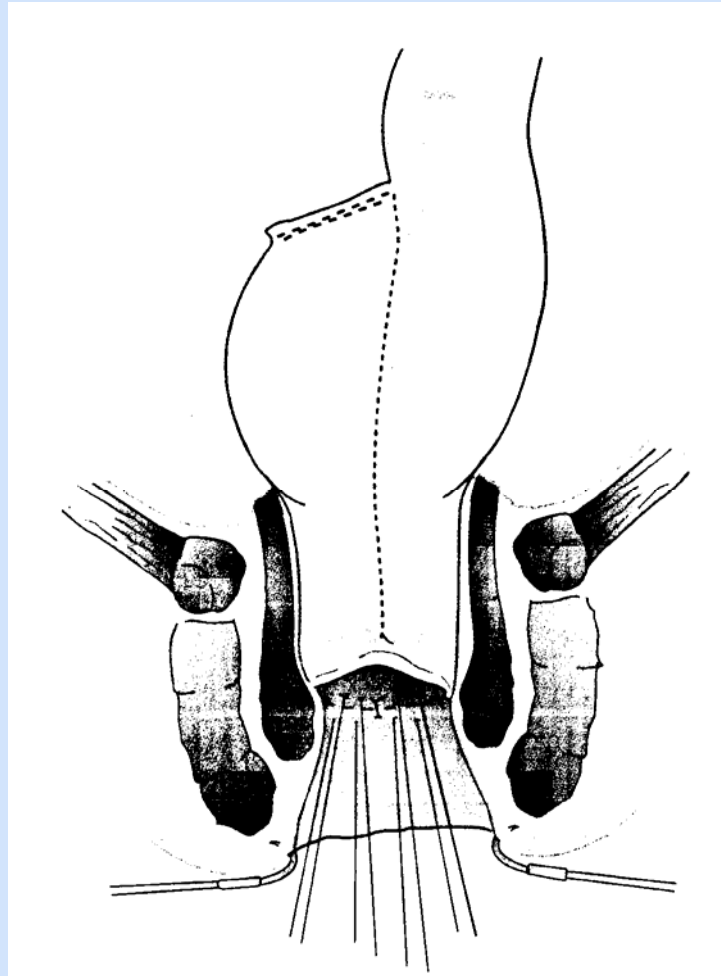
$\text{Na}_2\text{S} \rightarrow \text{NaHS} \rightarrow \text{H}_2\text{S} \rightarrow \text{Leaves feces as gas} \rightarrow \text{Absorbed}$



Hydrogen Sulfide Production by Feces from UC Subjects and Healthy Controls



Ileal Pouch

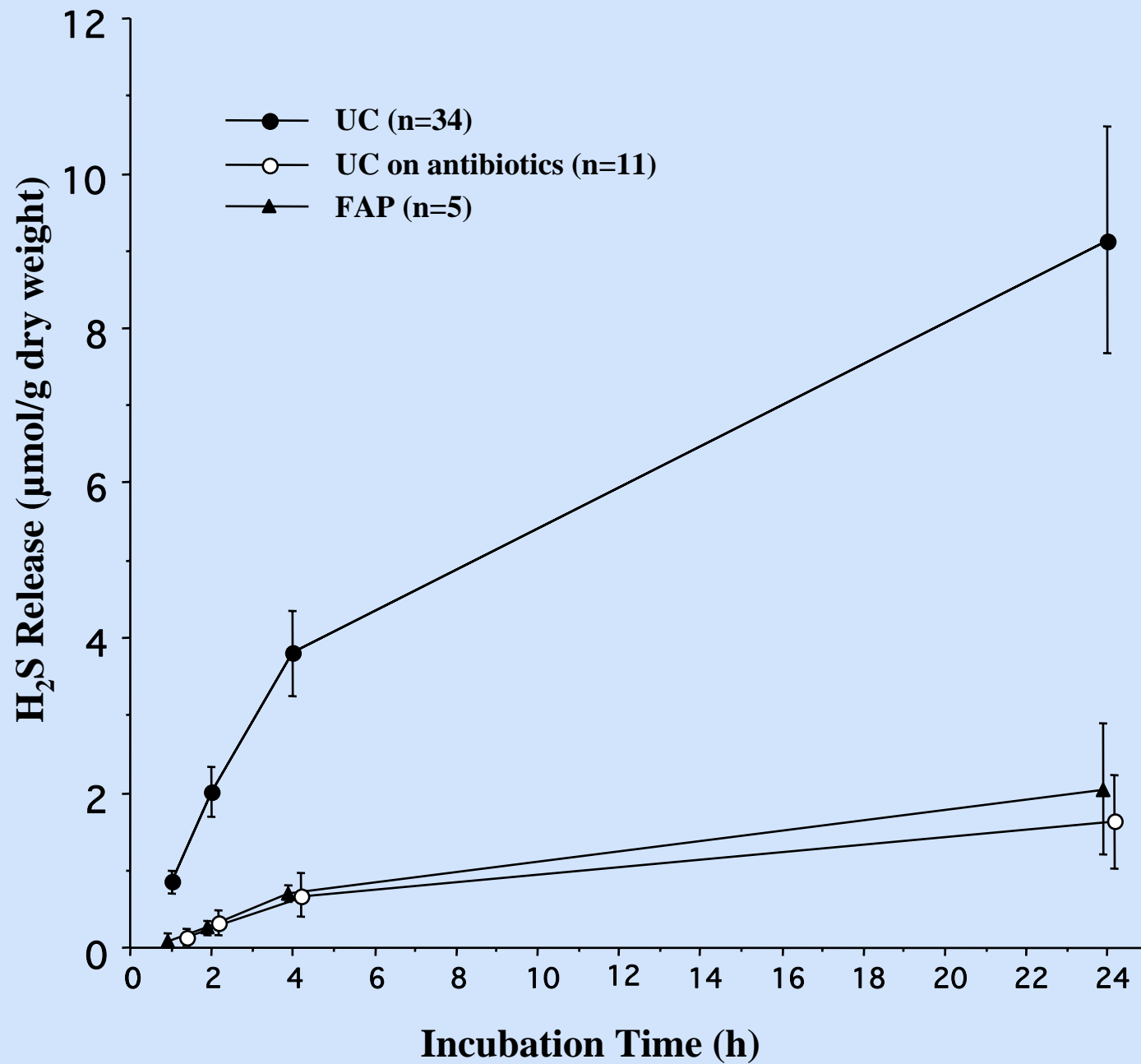


Ileal Pouches

- 1) If colectomy for ulcerative colitis, about 40% of subjects develop inflammation of pouch that usually responds rapidly to antibiotics.**
- 2) If colectomy for familial adenomatous polyposis, virtually never develop pouchitis.**

Therefore...ulcerative colitis subjects seemingly must produce some unusual fecal bacterial product that causes inflammation of ileum.

Figure 1



Conclusions:

- 1) The fecal production of H₂S, a highly toxic compound, is markedly increased in active UC or pouchitis.**
- 2) This elevated H₂S release could play a role in the etiology or perpetuation of the disease process.**

Questions:

- 1) Is the high fecal H₂S production secondary to excess substrate for sulfide production or to increased numbers and/ activity of sulfide-producing bacteria?
(Broad Foundation funded research project)**
- 2) Is this increased H₂S production a cause or effect of ulcerative colitis?**