Gastric secretion

body of stomach = corpus

- cephalic — 1/3 of gastric juice.
- gastric — 2/3
- Intestinal

* Cephalic phase :– all secretion in this phase occur before entering the food into stomach. (preparing for reciving food)

* Things that Stimulate this phace :–

see food , thinking about food , smell of food , tast of food.

all these things send signals to the brain to secret gastric juice. (to hypothalmus) → send impulse to dorsal nucleus of vagus → impulse to stomach → give impulse to different cells of stomach (cheif cell , parital cell , ...) to produce gastric juice

* The main content of gastric juice is Hcl & pepsin

* Things that Inhibit this phase :– any thing stimulate sympathetic :– stess , Emotional upset . by (thoracic segment (T_1 – L_1) → Inhibit secretion. then to splanchic nerve.

* parietal cells secret Hcl   * cheif cells secret pepsinogen.

* Gastric phase :– 2/3

* Stimulatory of this phase :–

1) Distention (stretch) → when food enter the stomach after receptive relaxation → distention → that stimulate stretch receptor → that stimulate vagus nerve → brain → vagus nerve trigger Hcl & pepsin production (vago–vagal reflex)
(sensory) afferent   efferent (motor)

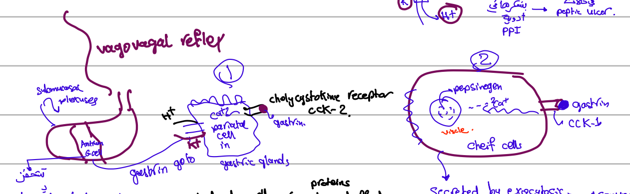
2) partialy digested proteins

This can be assisted by submucosal & myentric plexus (Short reflex)

* Antrum → has special cell → Enterochromatin G cells

G cells → ① responsed to partialy digested proteins ② then secret Gastrin hormone ③ Gastrin travel through blood → Go to receptor (cholycystokinin–2 receptor) CCK. in parietal cell → Increase Ca^{+} level Inside the cell → activat pump (K^+ / H^+)

→ pump مع تتبطى في دوية PPI → peptic ulcer. بيعالج



Secreted by exocytosis → converted to pepsin.

بناءً على H^+ concentration
عند pH (1.5–3.5)
لو pH أكثر
pepsin بطل تنشيط

رحلة Gastrin hormone بالرسم
cheif cell & parietal cell لل

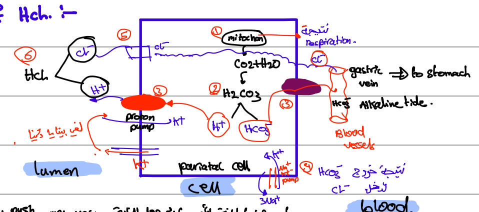
partial digested proteins → related to pH (act as buffer)

proteins

. proteins يحتمد حل تركيز pH ⟸ protein has –ve → attract H^+ ... بيخفف ال H^+ الموجود → So Increase pH

. pepsin ⟸ مما يؤثر ع تنشيط

* Formation of Hcl. :–



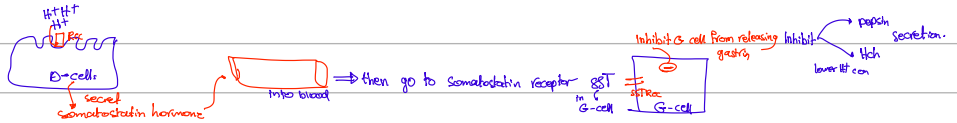
لم يكن توازنة الأمور وعدم جعل الخلية very acidic يصير push برا some H^+ وبسحب Na^+ لجوا

* Inhibitory of this phase :- 1) Sympathetic stimulation inhibit parasympathetic from production of gastric juice.

2) Somatostatin → secreted by Delta cell → stimulated in very low pH (H^+)

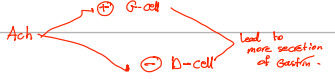
* Delta cell (D-cell) in antrum is located.

If H^+ concentration into lumen is high :-

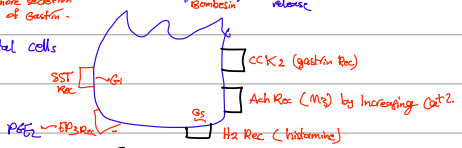


* If we dont need SST to inhibit gastric secretion, ① vagus nerve send signal to release Ach go to D cell → prevent release SST

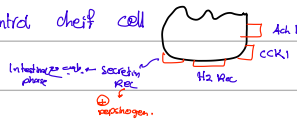
② gastrin when it is released. go to D-cell & inhibit it's work.



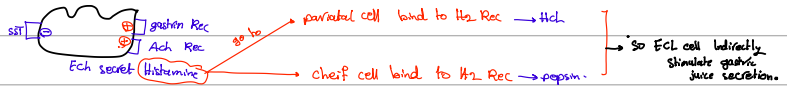
* Molecules that control parietal cells



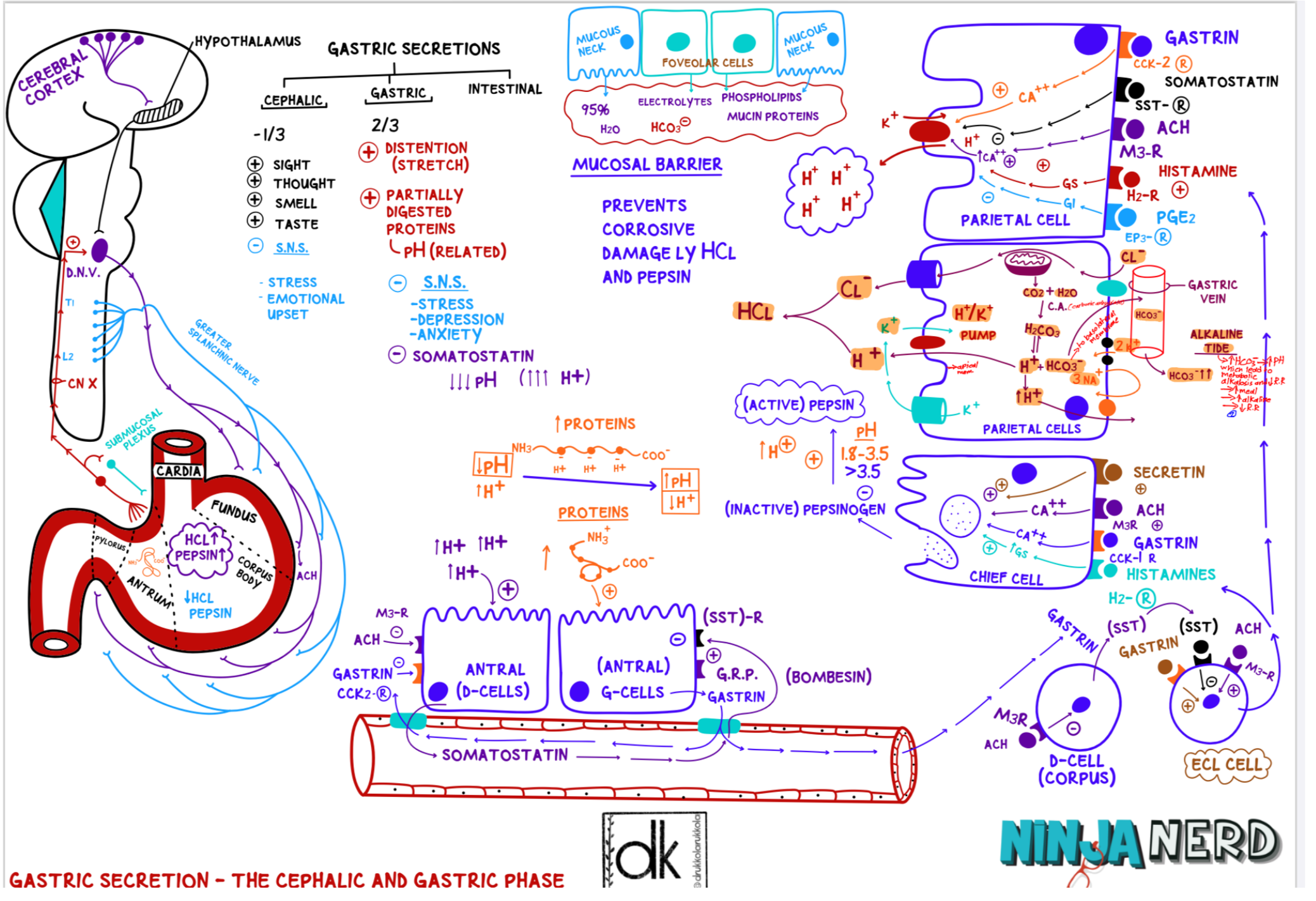
* Molecules that control cheif cell



* ECL cell → enterochromaffin like cell → exist mostly in body of stomach.



ملخص القصة كاملة



GASTRIC SECRETION - THE CEPHALIC AND GASTRIC PHASE

Q1) why you feel tired after having a big meal?

- لما نتناول كميات كبيرة من الطعام رح يزيد تركيز (H^+) في المعدة و لكن الدم اللي حوالين المعدة رح يزيد تركيز HCO_3^- فيه

هيدا فيه موجودة إما في (Heart) أو في (brain) (chemoreceptors) وهذا (receptor) بحس بتغير (pH) فلما يزيد (HCO_3^-) في الدم رح يزيد (respiratory rate) فبصير مع الشخص (hyperventilation) فبزيد (respiratory acidosis) وبقل (CO_2) فبصير عند الشخص (O_2)

هذه الحالة ما بتساعد على الهضم وفيها (pepsin) ما بتحول إلى pepsinogen

- برضو لما نتناول كميات كبيرة من الطعام رح تتمدد المعدة وتضغط على (diaphragm) فبتقل مساحة (Thoracic cavity) فبطل الشخص قادر يتنفس

Q4) what is the mechanism of drug that is given for treatment of (GERD)?

- omeprazole → inhibit hydrogen-potassium pump to decrease stomach acidity
- Histamine blockers (H_2 blockers) → block (H_2 receptors)
- prostaglandine → inhibit hydrochloric acid production

Q2) what is the enzyme that is working in very acidic media?

- pepsin

Q3) what kind of drugs that inhibit secretion and motility?

- somatostatin

Q5) you have two patients: The first one given glucose orally and the second (IV)

who is the first that is going to have higher insulin in the blood??

- في حال (IV) بسمه (glucose) لازم يروح للقلب عشان يضخه لباقي أعضاء الجسم لهيك استجابة الإنسولين بتوخذ وقت

- في حال (orally) بسمه (glucose) بعمل مباشرة (GIT) واللي بحتوي على (K cell)

صنه (K cell) بتفرز (glucose dependent insulenotopic peptide) واللي بدوره بعمل تحفيز لل (insulin)

برضو افراز (gastrin) بحفز كمية قليلة جدًا من (insulin)

* لهيك المريض اللي بنعطيه (glucose) عن طريق الفم برتفع عنده (insulin) أسرع

ملاحظات

بتقدر تعطي (somatostatin) في حال كان عند المريض (Somatostatinoma) لأنه بقدر يتبط نفسه