Salt for Brain & Body

STUDY: Neuropods cells in gut:
"Taste" system in the gut that we are not aware of that sends signals to the brain and cannot distinguish between 1) sweet + calories and non-sweet + calories.

FUNCTION OF Na – regulates fluid balance.
1 gram of table salt has 38 mg of Na.
We have an appetite for it – crave salt when low and when not needed.

BRAIN

- Blood-brain barrier – "Fence" around the brain.
- Brain cells cannot regenerate if they die.
- Born with many → age = neurons trained – why we increase intelligence as we get older → but then they slowly die off.

- Areas of the brain that monitor salt intake – OVLT (Organum Vasculosum of Lateral Terminals). A more porous fence around the brain lets them in.
- The brain needs nourishment, & different areas have inputs that neurons sense things pouring through, like salt.
- Sends signals to regulate many things, including the need for salt.

2 TYPES OF THIRSTS:

1. Osmotic Thirst - concentration of Na in blood when thirsty – OVLT controls the need for H2O.
   - Neurons sense osmolarity in blood.
   - Signals electrical activity to the pituitary gland.
   - Kidneys either restrict the amount of urine to release or keep it in the body.
2. Hypovolemic Thirst – when blood pressure decreases.
   - Baroreceptors sense low BP.
   - Blood volume decreases when vomiting, losing blood, and diarrhea.
3. Both types of thirst sense Na needs.

H2O and Na work together to regulate H2O intake and urination output.
Kidneys – intelligent filters that filter blood.

- Blood enters → 90% absorbed → OVLT effect.

Kidneys use Na to hold H2O.

Na holds H2O.

Homeostatic balance – Na+-H2O balance depends on many factors, including hormones.

HOW MUCH IS NEEDED?

NOTE: ½ tsp. of Na = 2 grams/2,000 mgs.

- Many studies show high Na is bad = Because H2O follows NA, cells swell & neurons suffer.
- But if Na is too low, brain cells can shrink.
- Need a "middle ground."

STUDY: Na excretion: hazard ratio @ low = fewer health risks with 2 grams/day.
@ higher = more health risks with 7-10 grams/day.
But 4-5 grams/day was actually healthy.

Those with high BP – yes, must have lower Na intake.

Those with low BP may need a higher Na intake.

CURRENT RECOMMENDATIONS FOR Na INTAKE

6-10 grams/day for low BP.

If drinking coffee, you will excrete Na, so for each ounce of coffee, drink 1.5 ounces of H2O.

8 to 12 grams of salt/day = 3.2 to 4.2 grams of actual Na, or 1.5 to 2 tsp./day.

K – Na ratio.

SALT & SUGAR PARALLEL PATHWAY RELATIONSHIP

Have salt sensors & sugar sensors that interact:

- Processed foods have hidden sugars.
- Salt and sweet food combos – overlapping neurons.
  - Sweet can suppress the taste of salt, and one can overeat salt.
  - Sweet can suppress the salt taste and lead to overeating sugar.

So, if you are trying to increase or decrease sugar or salt intake for certain health reasons, use salt-only or sugar-only food.

Na AND ACTION POTENTIAL

Neurons have an inside and an outside.

Negative charge inside & positive charge outside.

Opens up and Na rushes in → vomits out content → chain reaction ensues.

Why too much H2O (hypernatremia) can disrupt Na+/K+ pump actions and can kill cells.