

Body Fluids

Extra cellular Fluid

ECF $\frac{1}{3}$

Intra cellular Fluid

$\frac{2}{3}$ ICF

- * male \Rightarrow %60 Fluids (of the body mass)
- * female \Rightarrow %55 Fluids (of the body mass)

because female have more fat cells than male 😊

Extra Cellular Fluid



- * interstitial fluid and Plasma are constantly mixed
- * " " " " have the same composition
- * Plasma have more proteins than interstitial fluid

* IN our body we have two layers and between them we have cavities which is filled with fluid. What's its importance???

it's important for the friction that happens during movement or heart pumping

* some important fluids

peritoneal \Rightarrow Abdominal cavity

ocular \Rightarrow inside the eye

cerebrospinal \Rightarrow CNS (brain and spinal cord)

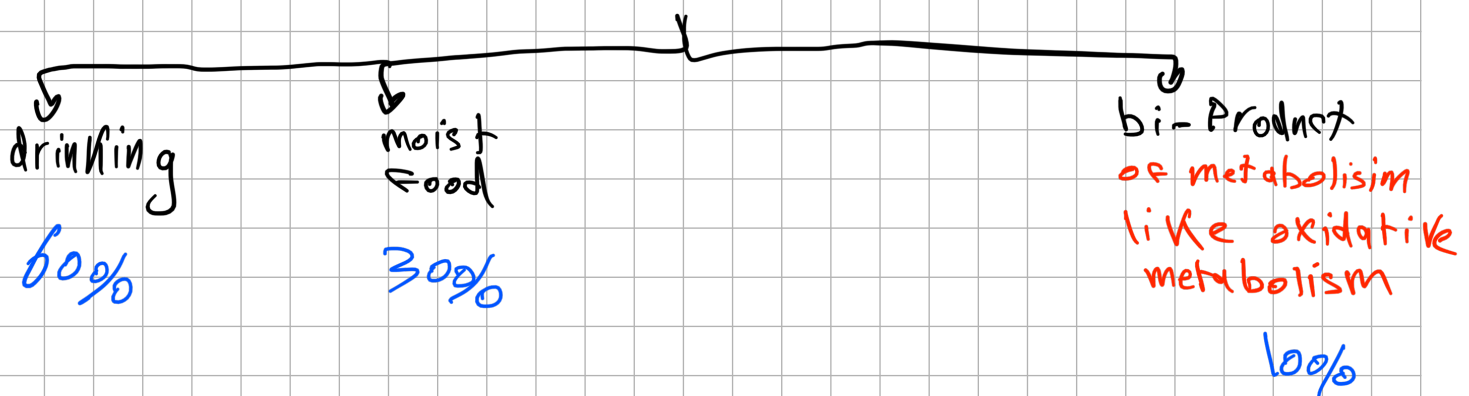
* Plasma is the intra vascular part of extracellular fluid

* the major factor of regulation of fluids :-

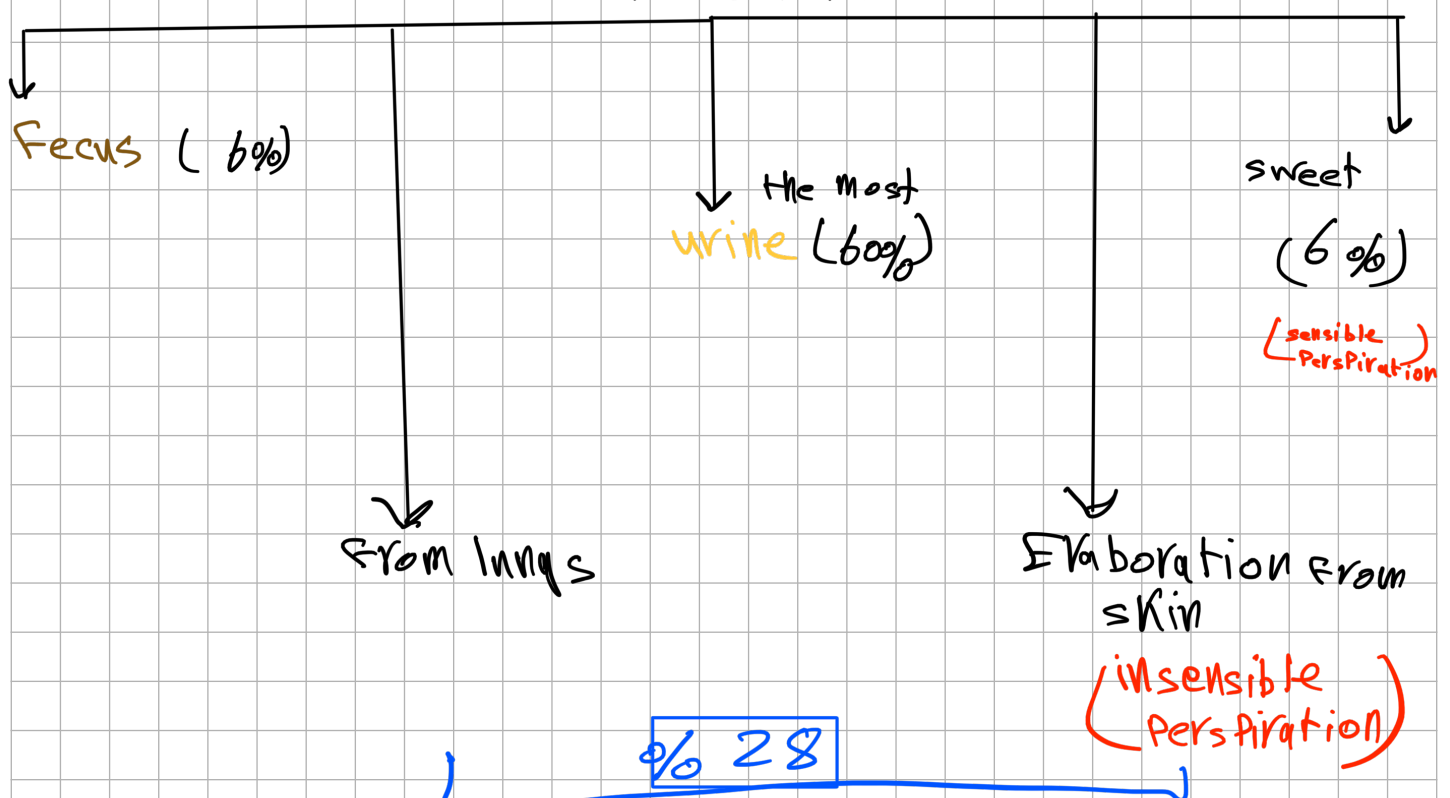
- ① osmotic pressure
- ② hydrostatic pressure
- ③ oncotic (colloid) pressure (caused by proteins)

the amount of water gain and lose is about 2500 ml/day

water input



water output



* insensible loss of water

① respiratory tract

② skin evaporation

* brain tissue is sensitive of changing of fluid

the measurement of total body water (volume)

① Radio Active water (Radio Activity is indicator of concentration)
or heavy water

($^3\text{H}_2\text{O}$ / T_2O / tritium)

After injecting radio active water in the blood

we will use $C_A V_A = C_B V_B$

C_A : the initial radio active concentration

C_B : " final " " " (which could be higher)

② Anti Pyrine:

* lipid soluble

* can rapidly penetrate cell membrane distribute by itself

* not radio active

* measurement of ECF

we must use substances that don't penetrate the cell membrane

examples:

$^{22}\text{Na}^+$

thio sulfate

^{125}I -iothalamate

inulin

radio active

radio active

not radio active

$$\text{IcF Volume} = \text{total body water} - \text{Ecf Volume}$$

* Very important note 😊 😊: we don't use Potassium in measuring the intracellular Fluid Volume

* PCV: total blood Volume in the Plasma

* Normal PCV: 45%

* Plasma composition:
اعرف ايشو 😊

• water: is the most: > 90%

• and we have Plasma Protein like

Albumen \longrightarrow the most Plasma Protein in Plasma

Globulin

Fibrinogen \longrightarrow important for making clots
باب اشره حي: (تسلي جرو)

* the Plasma reabsorb the Fluids from

interstitial Fluid \longrightarrow intra Vascular

body fluids 2

1 Regulation of Na^+ and water

* involves regulation of osmolality and ECF

* why ECF: because the concentration of Na^+ in ECF is more than " " in ICF

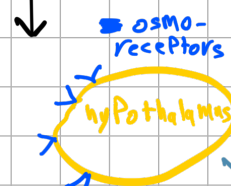
هبة منى بد بسك كلس فظرة

A Regulation of water intake

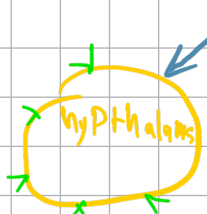
loss of water

increase in osmolality

مست زياد
osmolality

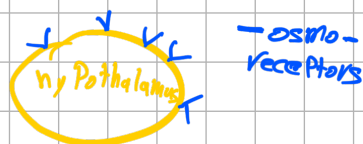


signals

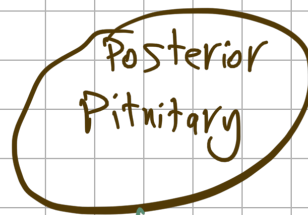


بدر الوجع طيبير
Feeling thirst - dry mouth and reduce salivation

B Regulation of output
(كنا بقدرا نخرج)

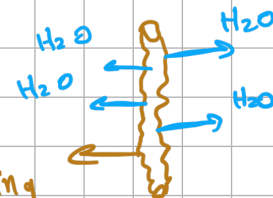


stimulation



After being stimulated

releasing ADH



renal collecting ducts

drink water

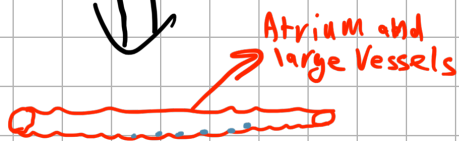
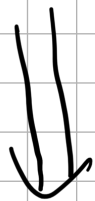
Volume of ECF depends on excretion of Na^+ in urine (مسألة بتعرف ليس).
اصبر!!

Plasma Volume decreases



blood Pressure decreases

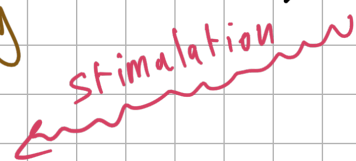
طبيعي لأن دماغك بمسألة ثقيل فحركته بتتصعب



baro receptors
رجح تصب بانخفاض
ضغط الدم



J cells



it will release Renin



Angiotensin I

بتحول لـ



stimulation

بفعل الـ
Renin

supraArenal gland

constriction of
blood vessels

(تضييق الشرايين)

Kidney

بمجرد ذلك



يعودني إلى

increases in reabsorption of Na^+
(بزيادة امتصاص الصوديوم)

كل الكلايم فان بفسير لكي ينزل ضغطك

* كما يرتفع ضغط الدم

عكس الذي فوق تماماً مع اختلال فان بسببه

Plasma Volume increases

blood Pressure increases (لأنه هناك بغير حثيث)

طبيعي من قوة الشفط بغير stretching
Artia قلباً إلى بجز ANP

يعمل inhibition (Angiotensin II / Aldosterone / ADH)

تأثير
the reabsorption of Na^+ will decrease

because it's inhibited the reabsorption of water will decrease

توسع وعاء مع بغير حثيث
Vaso dilation

☆ فيزيولوجيا ضغط الدم
أقرأها قصة بنفسك

hyper Volmia / hyponatremia

High release of ADH \implies

Low " " " \implies hypo Volmia / hypernatremia

High " " Aldosterone \implies hypernatremia / hyper Volmia

Large amount of water \implies hyponatremia / hyper Volmia