

Sheet 7

Peritubular Capillaries~

1. Increase in hydrostatic pressure > Decrease in reabsorption.
2. Decrease in the oncotic pressure > Decrease in reabsorption.

Hormone	Site of action	Effect	Factors affecting its secretion	Diseases
Aldosterone	LATE distal convoluted tubule + cortical and medullary collecting duct. ENac [Na+/K+ exchange Na+/K+ ATPase.	Principal cells > increases sodium reabsorption through Na+ exchanger + Na+/K+ ATPase. > increases potassium secretion [hypokalemia]. Intercalated cells > increases H+ secretion > alkalosis.	Factors that increase its secretion: <ol style="list-style-type: none"> 1. Renin release [Ang II]. 2. Hyperkalemia. 3. ACTH [permissive role]. Factors that inhibit its secretion: <ol style="list-style-type: none"> 1. ANP aka ANF. 2. Increased plasma Na+. 	1/ Primary aldosteronism [Conn's syndrome]: sodium retention > water retention > Htn. hypokalemia + alkalosis. 2/ Aldosterone deficiency [Addison's disease]: sodium wasting > water wasting > Hypotension. hyperkalemia + acidosis.
Angiotensin II	Early proximal convoluted tubule [binds to AT1 R]. Na+/H+ exchanger. Na+/K+ ATPase. Na+/HCO3- cotransporter.	1/ Increases aldosterone secretion. 2/ Directly increase Na+ reabsorption [proximal, loop, distal, collecting tubules]. 3/ Constriction of E arteriole.	Factors that increase its secretion: <ol style="list-style-type: none"> 1. Activation of the <u>sympathetic nervous system</u>. 2. Low sodium diet / hypovolemia. Factors that inhibit its secretion: <ol style="list-style-type: none"> 1. Hypertension. 2. ANP. 	
ADH [Vasopressin]	LATE distal convoluted tubule + cortical and medullary collecting duct. V2 [G-protein coupled recepto] > AC > cAMP > PKA > Phosphorylation of AQP-2 channels.		Factors that increase its secretion: <ol style="list-style-type: none"> 1. Hyperosmolar blood. Factors that inhibit its secretion: <ol style="list-style-type: none"> 1. Hypoosmolar blood. 2. ANP. 	1/ SIADH: Hypoosmolar blood + hyponatremia / excessive water reabsorption. 2/ Central diabetes insipidus [insufficient ADH]: Hyperosmolar blood > always thirsty. High water excretion !!

ANP		1/ Inhibits Na ⁺ reabsorption. 2/ Inhibits Renin [RAAS system]. 3/ Inhibits ADH release. 4/ Increases GFR. 5/ Vasodilation of the A arteriole.	Factors that increase its secretion: 3. Increased blood pressure + volume [stretch].	
PTH		1/ Increase in Vitamin D3 > increase in Ca ⁺⁺ reabsorption from the intestines. 2/ Increase in Ca ⁺⁺ reabsorption from the kidneys. 3/ Release of Ca ⁺⁺ from bones. 4/ Decrease in PO ₄ ³⁻ reabsorption from kidneys.	Factors that increase its secretion: 1. Hypocalcemia [decreased extracellular calcium]. Factors that inhibit its secretion:	
E & NE		1/ Stimulates Na ⁺ reabsorption. 2/ Increase in renin release. HIGH levels of SNS stimulation lead to decreased RPF + GFR.		

ADH ~

High osmolarity > osmoreceptors of HYPOTHALAMUS > posterior pituitary > secretes ADH :).