Hormonal Control of Blood Volume and Pressure

To complete this worksheet, select:

Module: Balancing Fluids
Activity: Animation
Title: Hormonal Control of Blood Volume and Pressure

Introduction

1. Identify the components of an endocrine feedback loop.

Antidiuretic Hormone (ADH)

2. What stimulates ADH secretion from the posterior pituitary?

b. Describe ADH affect on the following:
   i. blood vessel wall smooth muscle -
   ii. nephron principle cells -
   iii. sweat glands -

c. In summary, what homeostatic affect does ADH have on blood volume and pressure?
Renin/Angiotensin

3. a. What stimulates renin secretion from the juxtaglomerular cells in kidney nephrons?

b. Renin promotes formation of angiotensin II. What affect does angiotensin II have on the following?
   i. blood vessels -
   ii. adrenal cortex zona glomerulosa cells -
      • What affect does aldosterone have on the nephron collecting duct reabsorption?
   iii. proximal convoluted tubule -

c. In summary, what homeostatic affect does ADH have on blood volume and pressure?

Aldosterone

4. You just studied that angiotensin II stimulates secretion of aldosterone from the zona glomerulosa cells of the adrenal cortex. Summarize aldosterone's affect on reabsorption of ions and water.
Atrial Natriuretic Peptide (ANP)

5. a. What stimulates ANP secretion from atrial cells of the heart?

b. What affect does ANP have on the following:
   i. smooth muscle in blood vessel walls -
   ii. proximal convoluted tubule cells -
   iii. glomerular mesangial cells -

c. Summarize how ANP contributes to blood pressure and volume homeostasis. (This segment of the CD does not summarize these affects for you.)