ESTD - 1928

CORTICOSTEROIDS

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CONTENTS :

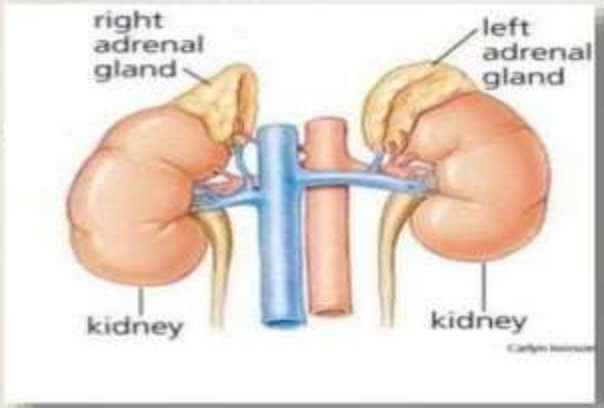
INTRODUCTION

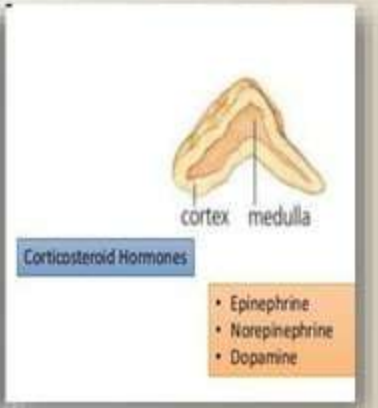
- Corticosteroids are a class of steroid hormones that are produced in the adrenal cortex.
- Corticosteroids are involved in a wide range of physiologic system such as:
- Stress response
- immune response & regulation of inflammation
- Carbohydrate metabolism
- protein catabolism
- Blood electrolyte level

HISTORY

- Hench (1949) –improvement in rheumatoid arthritis by using cortisone
- In 1950 Nobel prize –Kendall and Reichstein and Hench, for developing corticosteroids
- Currently, drugs with one of the broadest spectrum of clinical utility

FUNCTIONAL ANATOMY & HISTOLOGY OF ADRENAL GLANDS





ADRENAL GLAND

Zona Glomerulosa

Mineralocorticoids
- Aldosterone

Zona Fasciculata

Glucocorticoids
- Cortisol

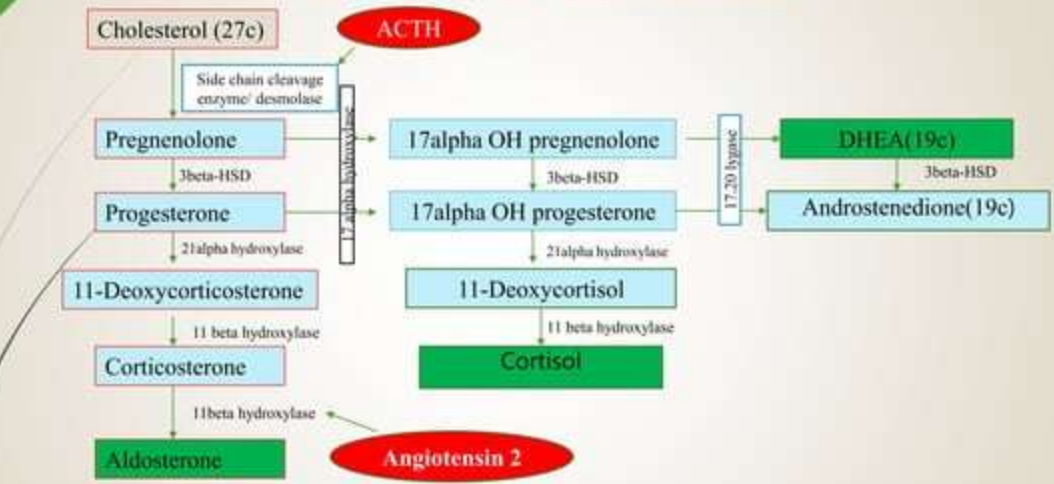
Zona Reticularis

Androgen Precursors
- Dehydroepiandrosterone

Catecholamine's
- Adrenaline
- Noradrenaline

Zona glomerulosa	→	Angiotensin 2 & K+
Zona Fasiculata & Zona Reticularis	Stimulated by →	ACTH

BIOSYNTHESIS OF STEROIDS



NORMAL ADULT DAILY PRODUCTION

Cortisol	20 mg/ day
Corticosterone	2 mg/day
Aldosterone	0.125 mg/day
Dehydroepiandrosterone	30 mg/day

GLUCOCORTICOIDS

- Source: zona fasciculata
- Cortisol: Life protecting hormone

ACTION ON	EFFECT
On carbohydrate metabolism	Increase blood glucose level by gluconeogenesis or inhibit glucose uptake
Protein metabolism	Promote catabolism of protein in cell. Increases plasma amino acid & protein content
Fat metabolism	Metabolism of fatty acid from adipose tissue, increase utilization of fat for energy
Mineral metabolism	Enhance Na retention, K excretion Decrease blood Ca
Water metabolism	Excretion of water
On muscles	Increase the release of amino acids from muscle by catabolism of protein
Blood vessel	Decrease the release of eosinophil Decrease in no of lymphocyte Increase no of neutrophil, RBC & platelets

On resistance to stress

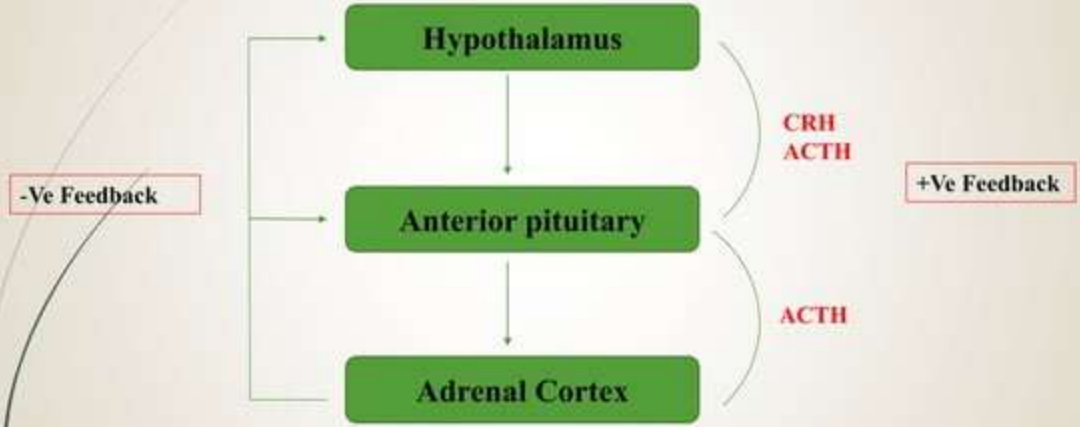
Physical or mental stress

Increase ACTH

Increase in glucocorticoid secretion

High resistance to body against stress

REGULATION OF CORTICOIDS SECRETION



Remember:

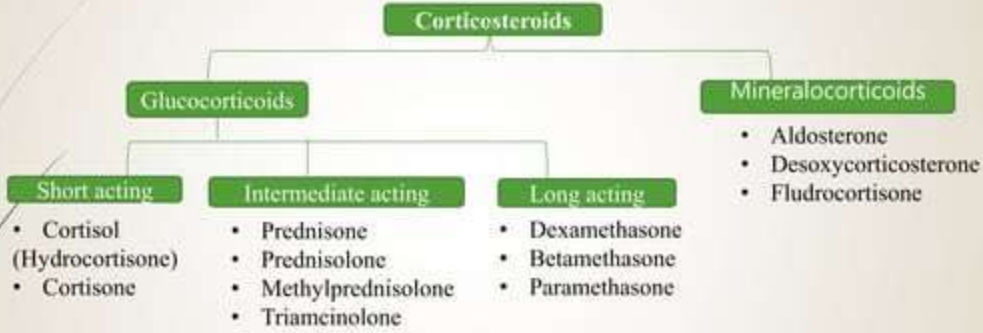
- Avoid
- Minimum period
- Minimum dose possible
- Stop at earliest
- No abrupt stoppage

MINERALOCORTICOIDS

- **Source**: Zona glomerulosa
- **Functions:** 90% of mineralocorticoid activity is provided by aldosterone
- **Aldosterone:** life saving hormone

Actions	effect
On Na+ metabolism	Increase in the reabsorption of sodium from renal tubules
On EFC volume	Increase in EFC volume
On BP	Increase EFC volume Increase BP
On K+ ions	Increase execration of k+ from renal tubules
On H+ ion concentration	Cause tubular secretion of H+ ions Essential to maintain Acid-base balance
On intestine	Enhances Na+ absorption from intestine

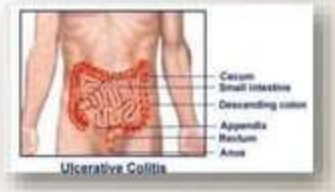
CLASSIFICATION



USES

- **Pharmacotherapy**
  - **ARTHRITIS**
    - Rheumatoid Arthritis
    - Gout
    - Osteoarthritis
  - **ALLERGIC REACTIONS**
    - Anaphylaxis
    - Serum sickness
    - Allergic rhinitis
  - **AUTOIMMUNE DIASEASE**
    - Hemolytic anemia
    - Idiopathic thrombocytopenic purpura
    - Active chronic hepatitis
  - **BRONCHIAL ASTHMA**
    - Status asthmatics
    - Acute asthma exacerbation
    - Sever chronic asthma

- **LUNG DISEASES**
  Aspiration pneumonia
  Pulmonary edema
  Lung maturation in fetus
- **INFECTION**
  Severe Tuberculosis
  Bacterial meningitis
- **EYE DISEASE**
- **SKIN DISEASE**
  Steven Johnson Syndrome
- **INTESTINAL DISEASE**
  Ulcerative colitis
  Crohns' syndrome
- **ORGAN TRANSPLANT**



ADVERSE EFFECTS

- **Effects resulting from continued used of large doses**
- **Cushing's syndrome:** central obesity (moon face), Truncal obesity, Muscle wasting, Fine hair grow over the face.
- **Hyperglycemia**
- **Increase chance of infection-** because of immunosuppression
- **Osteoporosis**
- **Peptic ulcer**
- **Mental disturbance-Insomnia, Anxiety, Nervousness, Euphoria**
- **Cataract**
- **Hypertension**
- **Inhibition or arrest of growth in children**

CONTRAINDIACTION

- Peptic ulcer
- Live vaccination
- Hypertension
- T.B infection
- Diabetes
- Osteoporosis
- Glaucoma
- Epilepsy

REFERENCES

- The Pharmacological basis of Therapeutics, Goodman and Gillman,12th edition.
- K.D Tripathi essentials of medical Pharmacology 8th edition.
- Lippincott illustrated Reviews-pharmacology 6th edition 2014.
- http://www.nursing.com


THANK
YOU!