

## Corticosteroid

- The adrenal cortex secretes steroidal hormones, which have glucocorticoid, mineralocorticoid and weakly androgenic activities.
- Conventionally, the term 'corticosteroid' or 'corticoid' includes natural gluco- and mineralo-corticoids and their synthetic analogues.

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## Classification of Corticosteroid

### **A. Glucocorticoids**

- a) Short acting ( $t_{1/2}$  -12 h): hydrocortisone, cortisone
- b) Intermediate acting ( $t_{1/2}$  -12-36h): Prednisolone, Methylprednisolone, Triamcinolone
- c) Long acting: ( $t_{1/2}$  >36h): Paramethasone, Dexamethasone, Betamethasone

### **B. Mineralocorticoids**

Desoxycorticosterone acetate (DOCA)  
Fludrocortisone  
Aldosterone

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## Pharmacological Action

### Glucocorticoids

- Effects on carbohydrate, protein and fat metabolism (promote glycogen deposition and inhibit glucose utilization; cause protein breakdown and amino acid mobilization and promote lipolysis)
- Inflammatory responses: they are mostly used in clinical setting for suppressing inflammatory responses.
- Immunological and allergic responses: They suppress all types of hypersensitization and allergic phenomena.

### Mineralocorticoid

- Effects on Na<sup>+</sup>, K<sup>+</sup> and fluid balance: Enhancement of Na<sup>+</sup> reabsorption in the distal convoluted tubule in kidney. There is an associated increase in K<sup>+</sup> and H<sup>+</sup> excretion.

## Mechanism of action

Corticosteroids penetrate cells and bind to a high affinity cytoplasmic receptor protein → a structural change occurs in the steroid receptor complex that allows its migration into the nucleus and binding to glucocorticoid response elements (GRE) on the chromatin → transcription of specific m-RNA → regulation of protein synthesis

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## Uses

### A. Replacement Therapy

Acute adrenal insufficiency

Chronic adrenal insufficiency

Congenital adrenal hyperplasia (Adrenogenital syndrome)

### B. Pharmacotherapy (for nonendocrine diseases)

Arthritis, Gout

Severe allergic reaction

Autoimmune disease

Bronchial Asthma and other lung diseases

Cerebral edema

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### Adverse Effect

**Mineralocorticoid:** Sodium and water retention, edema, hypokalaemic alkalosis and a progressive rise in BP.

### Glucocorticoids:

- Cushing's habitus: characteristic appearance with rounded face, narrow mouth, supraclavicular hump, obesity of trunk with relatively thin limbs.
- Hyperglycaemia, may be glycosuria, precipitation of diabetes.
- Peptic ulceration: risk is doubled
- Growth retardation
- Suppression of hypothalamo-pituitary adrenal (HPA) axis

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**Contraindications**

1. Peptic ulcer
2. Diabetes mellitus
3. Hypertension
4. Viral and fungal infections
5. Tuberculosis and other infections
6. Osteoporosis
7. Herpes simplex keratitis
8. Psychosis
9. Epilepsy
10. CHF
11. Renal failure

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