

Classification of hormones by mechanism of action:

A-Hormones that bind to intracellular receptors:
Steroid hormones,
Thyroid hormones (T3, T4)
Calcitriol
Retinoic Acid

B-Hormones that bind to cell surface receptors:

Second messenger cAMP

1-Catecholamines:
Alpha2 adrenergic, beta adrenergic, Anterior pituitary: FSH, LH, TSH and ACTH.
2-ADH 3-Calcitonin and PTH
4-Glucagon

B-Hormones that bind to cell surface receptors:

Second messenger cGMP

1-ANP
2-NO
Second messenger is Ca²⁺ or phosphatidylinositol system (or both):
1-Ach 2-Catecholamines (alpha1-adrenergic)
3-Angiotensin II 4-ADH

B-Hormones that bind to cell surface receptors:

Second messenger is a tyrosine kinase cascade

1-GH and prolactin
2-Insulin
3-Erythropoietin

Biological effect of insulin:

Increases:

Glucose uptake, Glycogen synthesis, protein synthesis and fat synthesis

Decreases:

Gluconeogenesis, Glycogenolysis and lipolysis

cAMP:

Activated by: **A**denylyl Cyclase
Will activate: Protein kinase **A**

cGMP:

Activated by: **G**uanylyl Cyclase
Will activate: Protein Kinase **G**

Factors determining the response of a target cell:

- 1-The rate of synthesis and secretion of a hormone.
- 2-the conversion of inactive forms of the hormone into fully active form.
- 3-the rate of hormone clearance from plasma (half life and excretion).
- 4-the number, relative activity, and state of occupancy of the specific receptors.
- 5- Post receptors

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