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Pharmacology

PHA 304

### Assignment

Pharmacology of the pituitary gland.

The pituitary gland, or hypophysis, is an endocrine gland, about the size of a pea and weighing 0.5 grams (0.018 oz) in humans. It is a protrusion off the bottom of the hypothalamus at the base of the brain.

The pituitary gland secretes hormones anteriorly and posteriorly.

The pituitary gland consist of both anterior and posterior pituitary hormones.

- Anterior pituitary hormones

1. somatotropins consisting of GH & Prolactin.

2. glycoproteins consisting of TSH (Thyroid stimulating hormone), FSH (follicular stimulating hormone), LH (luteinizing hormone).
3. POMC derivatives: Corticotropin (ACTH),  $\alpha$ -MSH.

1. (a). Growth hormone (GH):- Growth hormone is
  - Peptide hormone Principal form is a 22,000D single polypeptide chain of 191 amino acids. Mechanism of action is Via GH receptors which are cell surface receptors. Activation of the receptor is triggered by binding of a single GH molecule to two GHR to form a receptor dimer. This activates autophosphorylation of JAK2.

(b). Prolactin (PRL), whose release is inconsistently stimulated by hypothalamic TRH, oxytocin, vasopressor. These hormones are released from the anterior pituitary under the influence of the hypothalamus

2. (a). Thyroid stimulating hormone (TSH):- (TSH), is released under the influence of hypothalamic thyrotropin-releasing hormone (TRH) and is inhibited by somatostatin.

(b). Follicle stimulating hormone (FSH) and Leutenizing hormone(LH) :- both released under influence of Gonadotropin-releasing Hormone (GnRH)

• Posterior pituitary:

1. arginine vasopressin

2. oxytocin.

1. Arginine vasopressin :- ADH, also known as vasopressin and arginine vasopressin AVP), the majority of which is released from the supraoptic nucleus in the hypothalamus.

2. Oxytocin:- most of which is released from the paraventricular nucleus in the hypothalamus.

Oxytocin is one of the few hormones to create a

positive feedback loop. For example, uterine contractions stimulate the release of oxytocin from the posterior pituitary, which, in turn, increases uterine contractions. This positive feedback loop continues throughout labour.