



## Lecture 31:

# Adrenal Fatigue

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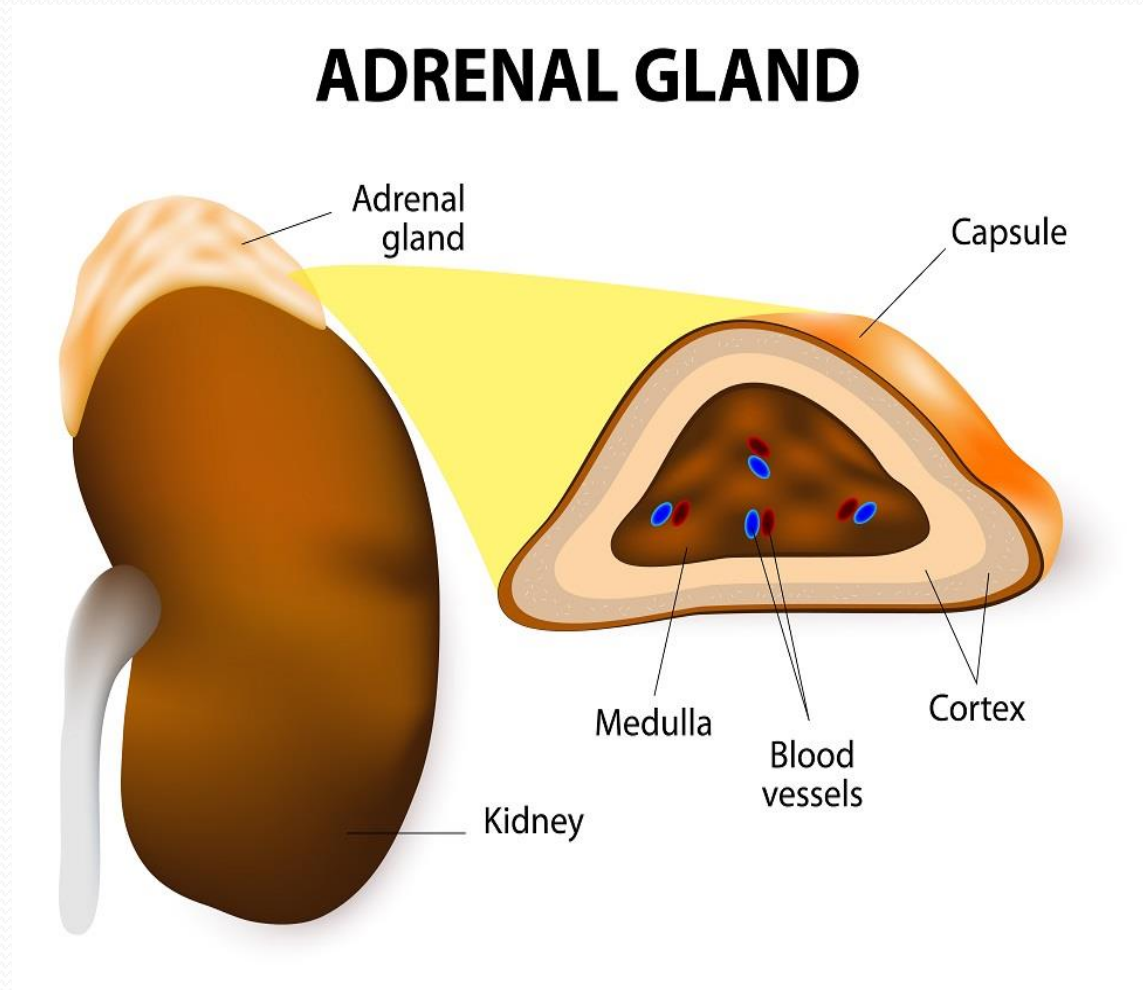
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# Adrenal Fatigue:

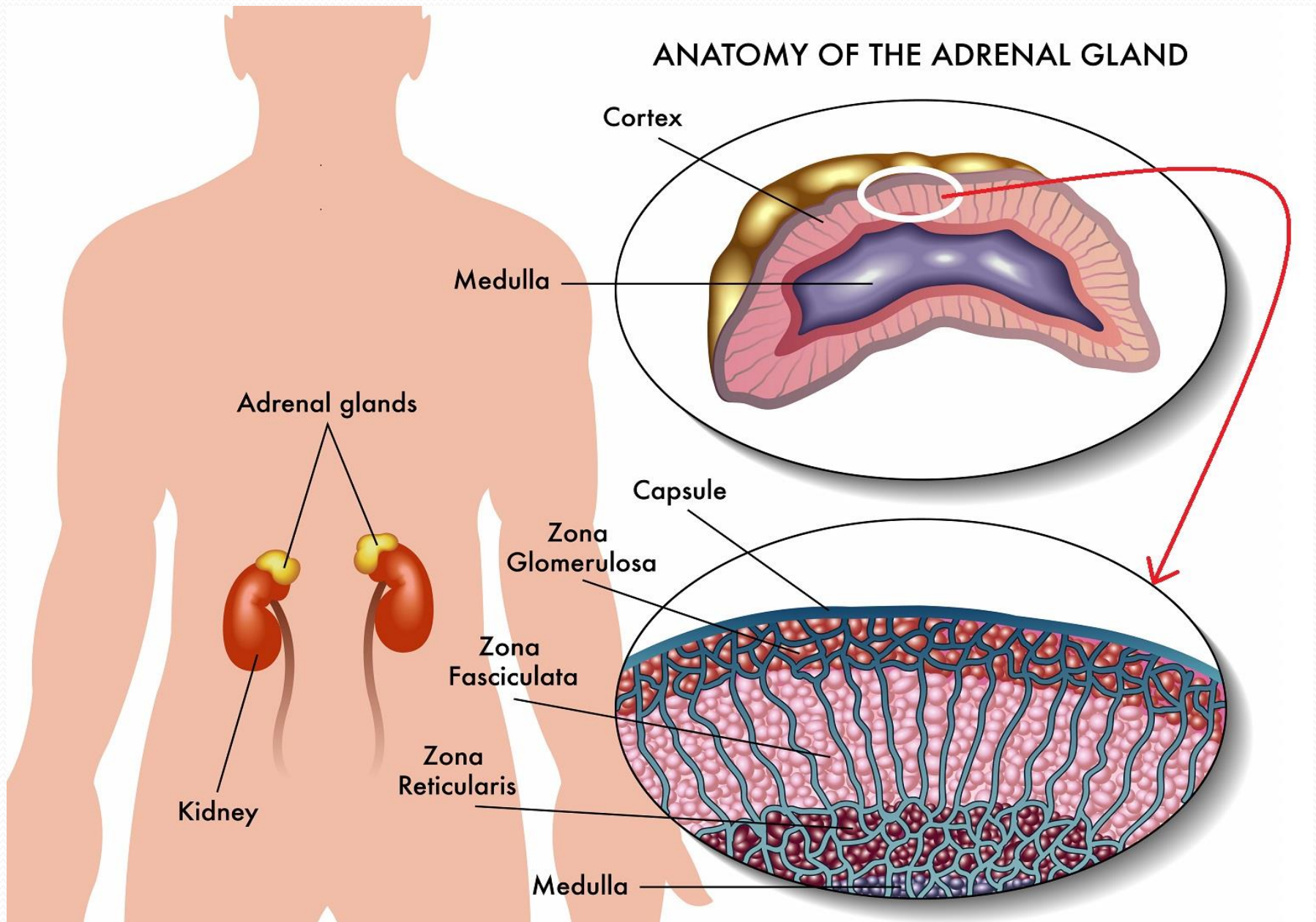
- Other names: **adrenal exhaustion, non-Addison's hypoadrenia, sub-clinical hypoadrenia, neurasthenia, adrenal neurasthenia, and adrenal apathy.**
- It is a constellation of signs and symptoms resulted from poor function of the **adrenal glands.**
- It is a term that has not been approved in conventional medicine yet!

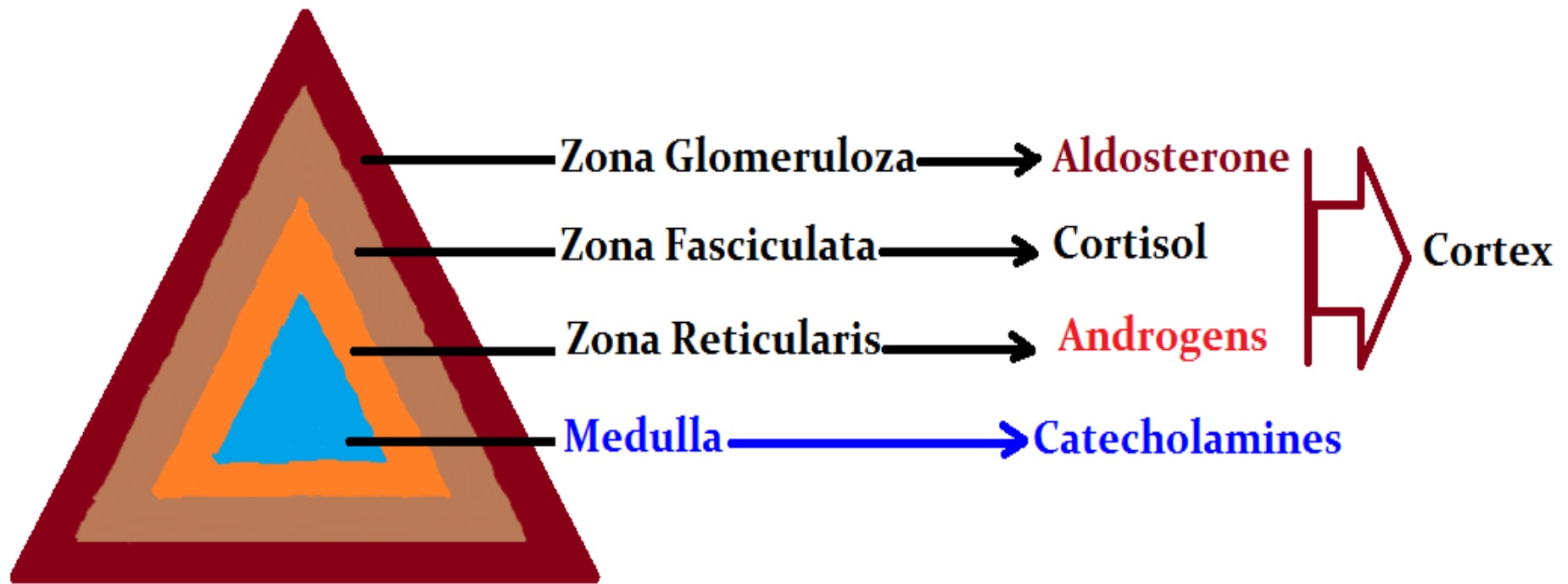
# Anatomy of Adrenal Glands:

- The normal adrenal glands weigh **about 6 – 10 grams** each. They are located above the kidneys.



## ANATOMY OF THE ADRENAL GLAND





- **Adrenal fatigue** occurs due to **chronic over stimulation** of the adrenal cortex followed by exhaustion.
- Adrenal glands do not pump out enough hormones and cannot adequately meet the demands of stressors.
- **Overtraining syndrome type 2** is a kind of adrenal exhaustion.
- It is common between 20 – 50%.

**Circadian rhythm**

**Stressors**  
(physical and emotional)

**Neurotransmitters**

**Hypothalamus**

**CRH**

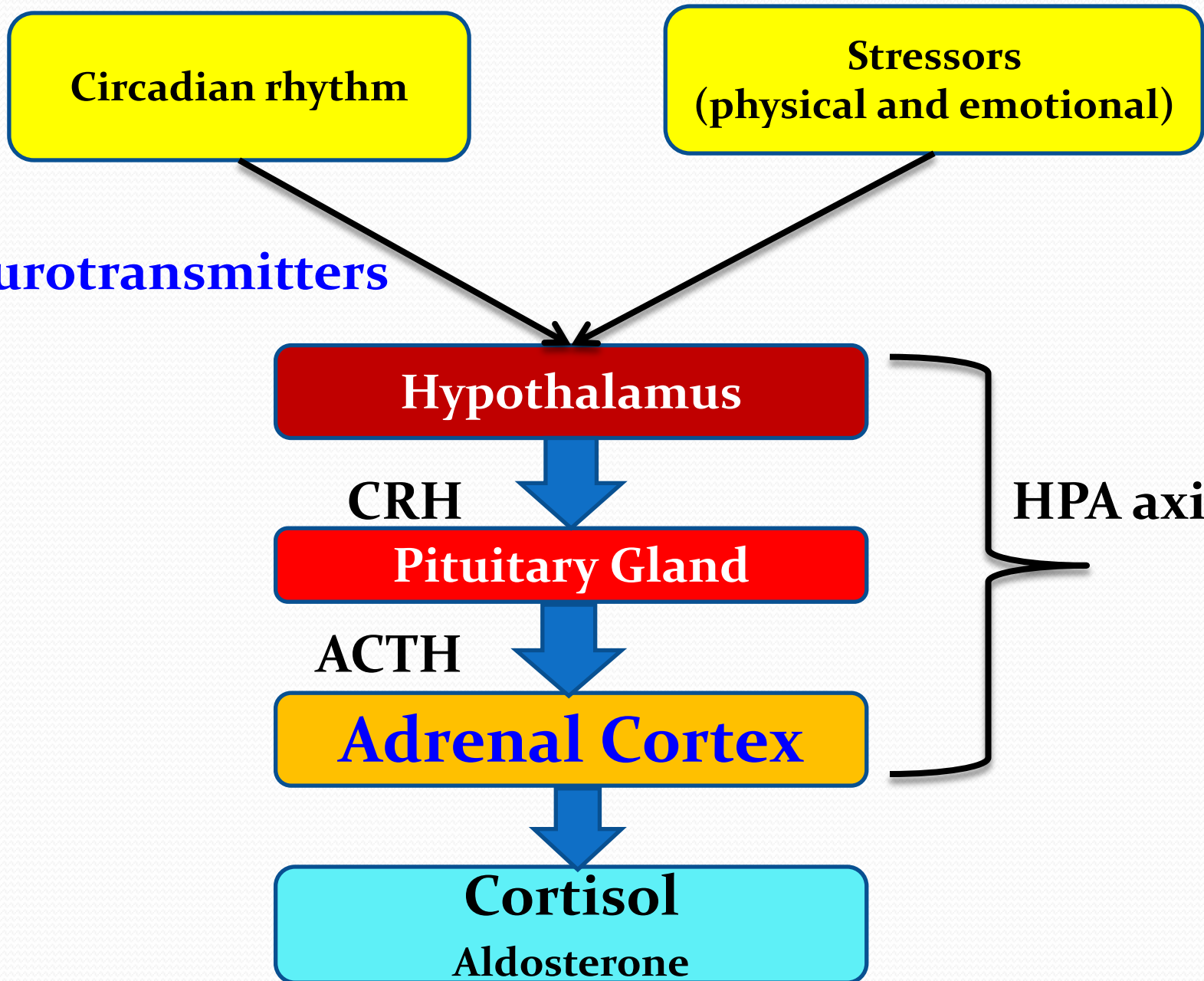
**Pituitary Gland**

**ACTH**

**Adrenal Cortex**

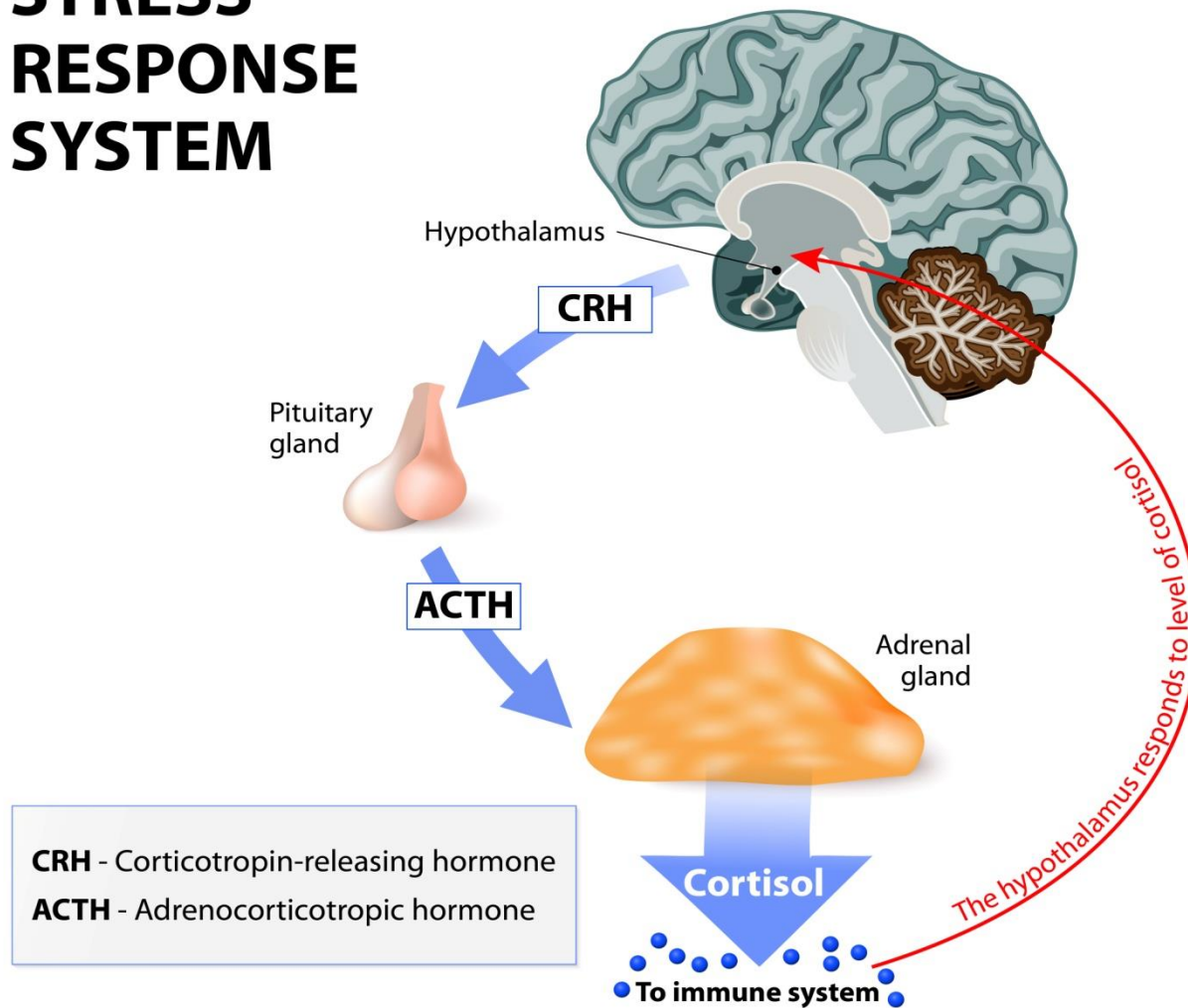
**Cortisol**  
Aldosterone

**HPA axis**





# STRESS RESPONSE SYSTEM

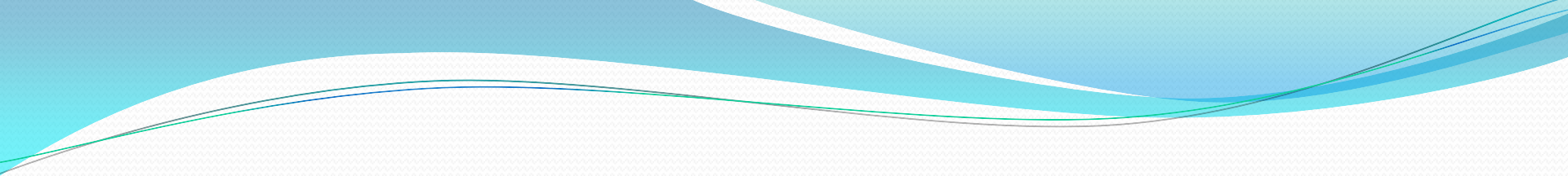


## **Risk Factors:**

- **Prolonged, intense exercise without recovery.**
- **Poor diet.**
- **Substance abuse.**
- **Poor sleep.**
- **Chronic illness or repeated infections such as bronchitis or pneumonia.**
- **Prolonged stressful situations (bad relationships).**
- **Stressful jobs.**
- **Poverty.**
- **Death of a loved one.**
- **Major surgeries.**

## **Sign and Symptoms:**

- **Fatigue and tiredness for no reason.**
- **Trouble getting out of bed in the morning regardless of good night sleep.**
- **Feeling more awake, alert and energetic after 5- 6 PM.**
- **Difficulty recovering from stress or illness.**
- **Craving salty and sweet snacks.**
- **Trouble thinking clearly or finishing their tasks.**

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- **Chronic fatigue during exercise.**
  - **Mood swings.**
  - **Loss of interest in training or competition.**
  - **Sleep disturbance.**
  - **Weak immune system.**
  - **Changes in appetite.**
  - **Tendency to infections.**
  - **Poor athletic performance.**

# **Adrenal Fatigue Hygiene:**

- **Sleeping.**
- **Diet.**
- **Supplementation.**

# **Sleep Hygiene:**

## **Follow a sleep hygiene:**

- **Avoid having heavy meals, alcohol and caffeine before bedtime.**
- **Arrange a sleep environment (dark, comfortable, quiet).**
- **Avoid watching TV in bed.**
- **Exercise within 3 hours before bedtime.**

**Adrenal  
Fatigue**

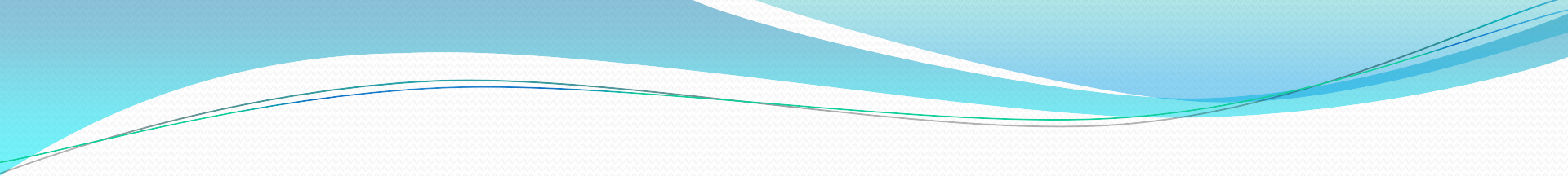


**Poor  
Sleep**

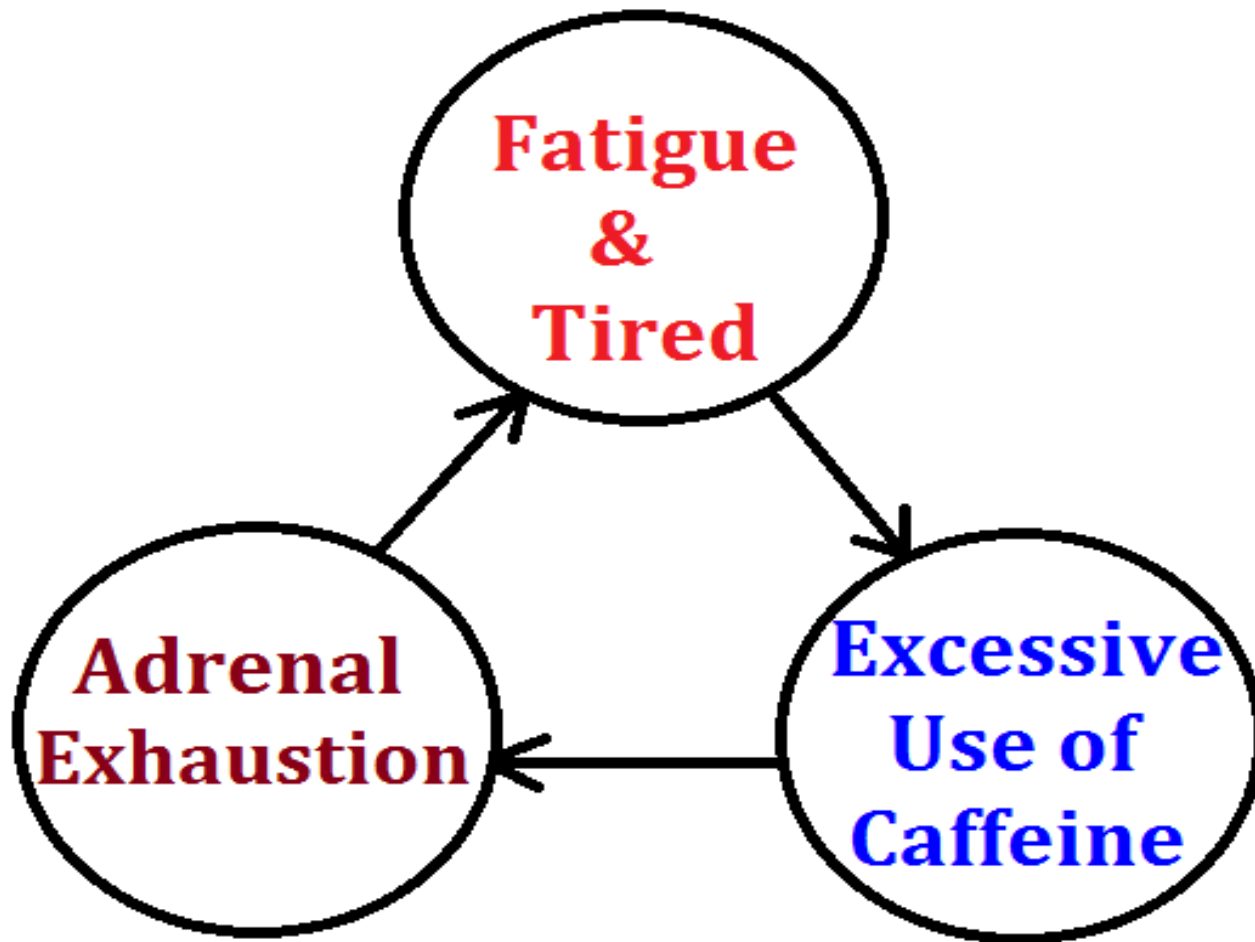
# Adrenal Fatigue Diet:

- **Hydration:** keep the body fully hydrated.
- **Fresh fruits and vegetables:** 6 – 8 serving a day.
- **Whole gains.**
- **Add 1 – 2 tablespoons of essential fatty acids to your diet.**
- **Stay away from processed foods.**



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- Watch the Salt:
    - Choose **sea salt** as it contains iodine.
    - Keep your daily salt intake at 4 – 5 grams, which provide you about 2-3 grams of sodium.
  - Increase taking foods high in Omega-3.
  - Avoid sugar and sweets.
  - Eat more of multi-veggies soups or broths.
  - Stop alcohol.
  - Stop caffeine and all caffeinated beverages.

# Caffeine Cycle:





# Adrenal Fatigue Supplementation:

- 1) **Vitamin C**: 2 – 3 grams a day.
- 2) **Zinc** : 50 – 100 mg a day.
- 3) **Magnesium**: 400 – 800 mg a day.
- 4) **Bioflavonoid Complex**: 1 – 3 grams a day.
- 5) **Adaptogens**: **Choose TWO**:
  - a) **Ashwagandha** (Indian ginseng): 1000 – 1500 mg a day.
  - b) **Eleuthero** (Siberian ginseng): 500 – 1000 mg a day.
  - c) **Licorice** as DGL (de – glycyrrhizinated licorice): 500 – 1500 mg a day.
  - d) **Rhodiola Rosea**: 100 – 600 mg daily

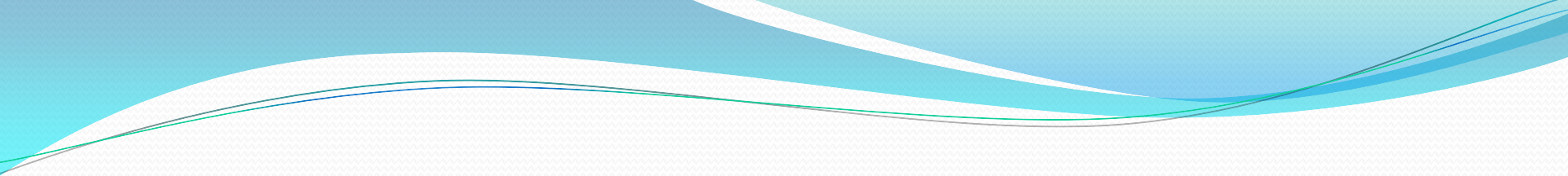
- **6) Mood and Sleep Enhancers: Choose ONE:**

- a) **GABA** (Gamma-Aminobutyric Acid): 500 – 1500 mg a day.
- b) **L – Theanine**: 200 – 300 mg a day.
- c) **5 – HTP** (5 – Hydroxytryptophan): 50 – 100 mg bedtime.

- **7) Calming Herbs: Choose TWO:**

- a) **Passion Flower Extract**: 450 – 900 mg a day
- b) **Valerian Root**: 450 – 900 mg a day
- c) **Holy Basil**: 500 – 1000 mg a day.
- d) **Kava Extract**: 250 – 500 mg a day.

- **8) A high quality vitamin – B Complex.**

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- 9) **Optional Products:**
    - a) **Omega – 3 fatty acids:** 2 – 3 grams a day.
    - b) **Iodine:** 150 – 300 mcg a day.

# Homework:

- 1) Describe your practical approach to adrenal fatigue.
- 2) Describe the functions of the adrenal glands and how they respond to stressors.





