Physiological adjustment in hormone level at high altitudes

H Vaish, Department of Physiotherapy, School of Health Sciences, Chhatrapati Shahu Ji Mharaj University

- Hormonal stimuli refers to the release of a hormone in response to another hormone. A number of endocrine glands release hormones when stimulated by hormones released by other endocrine glands.

- **Acute and chronic exposure to high altitude indues various physiological changes**
- Desensitization of adrenergic system

Decreases

- Follicle stimulating hormones level
- Prolactin level

Elevates

- Thyroid hormones (16 to 21%)
- Norepinephrine and cortisol level
- Adrenal

Unchanged

- Luteinizing hormones, epinephrine, dopamine, growth hormones, hypothalamus

Hormonal changes

- Changes in fluids status at altitudes can be caused by alteration in the concentration of hormones involved in altering a normal fluid and electrolyte(sodium and potassium)
- Aldosterone and arginine vasopressin have an effect on the kidney to reabsorb water to help limit catecholamine release upon acute exposure to reduce $PO_{2,}$ norepinephrine increase progressively during rest as exercise peaking inside of a week of exposure.

Environmental physiology

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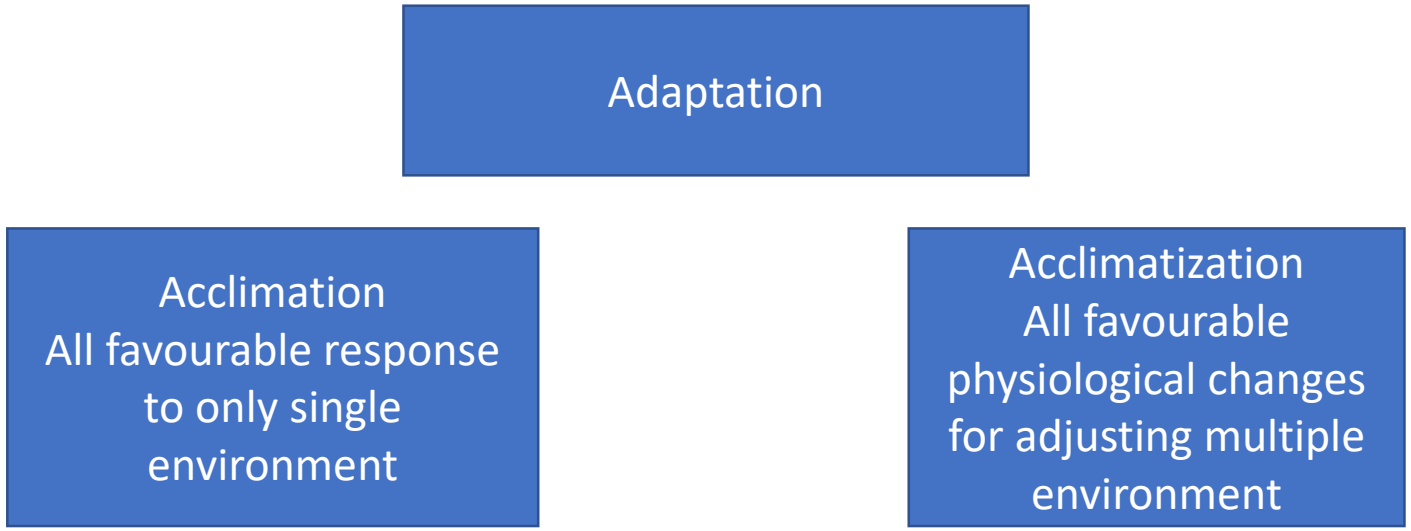


- Physical exertion drives the growth hormone and thyroid hormone activity, thyroid hormones increases but thyroid stimulating hormone are preserved.
- Endocrine regulation mediates high altitude sickness.
- Acclimatization at 4800m led to normalization of adrenal but not thyroid hormone

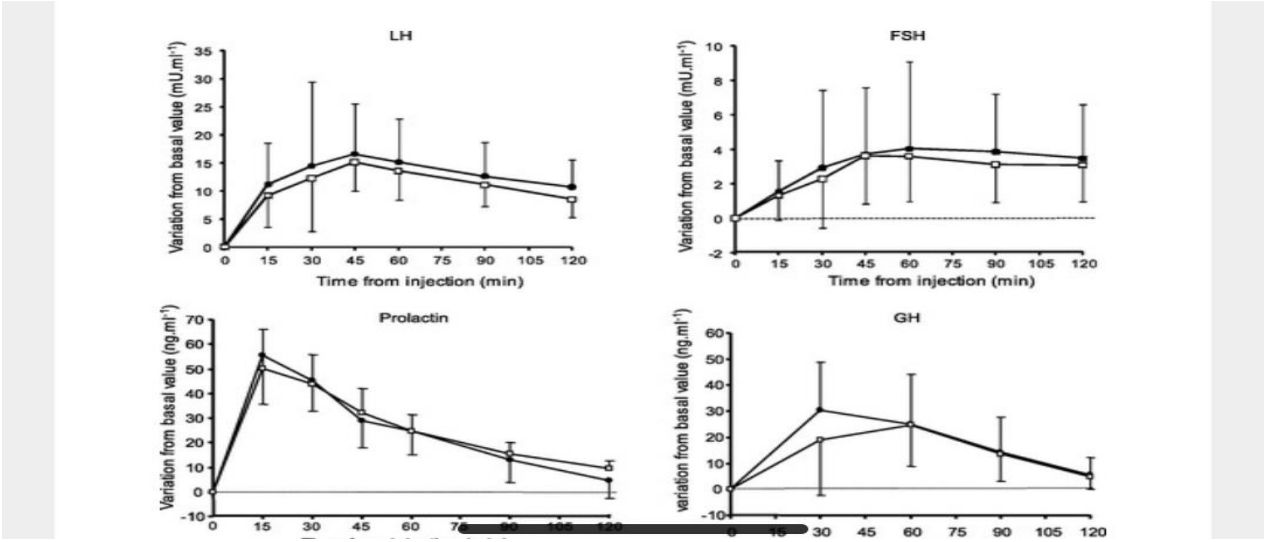
- Growth hormone(anabolic) No changes due hypoxic exposure
- Cortisol(catabolic) increases the blood pressure during sudden exposure to high altitude.
- TSH and free thyroxine(anabolic) increases pulsatile but at high altitude(4800m) acclimatation occurs which stabilizes the endocrine changes. T4 tend to decrease due to hypoxia during the first 60 min.

THYROID HORMONE

- It increase the level of 2,3 diphosphoglyceric acid in erythrocytes, which facilitates oxygen release to the tissues , leads to oxyhaemoglobin curve to the right.
- The T4 degradation rate increase during the first 3 days at altitude and thereafter remains slightly elevated .

Prolactin(It help in regulating blood pressure and metabolic function)

- The level of prolactin increase with the influence of altitude, it reaches peak value after 15 min and drop to near in 2 hours.
- No variation in prolactin level due to hypoxia and normoxia.



Thank You