

Stress and Hormones: Involvement of Estrogen in Mediating Stress Response

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Our health and wellbeing are integrally connected to stress induced by our environment in various ways. Stress is considered environmentally mediated through the way our lifestyle interacts with the food we eat, the water we drink, the air we breathe, and the soils and sediments our communities rely upon for sustenance. Understanding the link between the environmental stress and hormones is critically important to the future of our healthcare.

Hormones play an important role in regulating our bodies. The stressful environment applies a hard pressure on the individual and its coping ability, but in the long run, increased tolerance to stress is likely to be selected for through the generations. The different stressors in the environment are likely to contribute to the alterations in stress tolerance. Activation of the stress system leads to behavioral and peripheral changes that improve the ability of the organism to adjust homeostasis and increase its chances for survival [1]. CRH plays an important role in inhibiting GnRH secretion during stress. While coping up with stress our body faces a difficulty in performing physiological function like reproduction. Therefore, studies seeking to understand the impact of environmental stress on reproductive functions are needed.

Reproduction under environmental stress is a very important aspect. The mechanisms by which stress influences reproduction are likely to involve complex interactions between a number of central and peripheral pathways and may be different in males and females [2]. Estrogen signaling is required for the maintenance of male reproductive function and is mediated by the estrogen receptors ER α and ER β [3]. Studies have been performed clarifying pathways of receptor interactions with hormones and stress is important. Evidence supporting this belief shows that steroid like estrogen has two receptors out of which the receptor alpha has a role in modulating stress response [4]. It has been observed that due to stress the HPG axis gets inhibited. An inverse relation can be seen in the interaction of HPA and HPG axis. It is important to determine the stress pathways activated by particular stressors and to establish how these pathways affect the reproduction. It is believed that developing the necessary understanding to explain these factors starts with a better understanding of the role of estrogen hormone and stress in the environment.

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