Joual of Molecular Pathophysiology, 2022
VOL 11, NO. 4, PAGE 01-02

PERSPECTIVE

Open Access

General Note on Endocrine Disruptor and its Systems

Lucio Bogli*
Department of Neurosurgery, University Hospital St. Anna, Ferrara, Italy

ARTICLE HISTORY
Received: 18-Mar-2022, Manuscript No. JMOLPAT-22-62857;
Editor assigned: 21-Mar-2022, PreQC No: JMOLPAT-22-62857 (PQ);
Reviewed: 5-Apr-2022, QC No: JMOLPAT-22-62857;
Revised: 11-Apr-2022, Manuscript No: JMOLPAT-22-62857 (R).
Published: 18-Apr-2022

Description

Endocrine disruptors are chemicals that can interfere with the endocrine system. They are also known as hormonally active agents, endocrine disruptive chemicals, or endocrine disrupting compounds. Cancerous tumours, birth abnormalities, and other developmental diseases can result from these changes. Endocrine disruptors are chemicals that "interfere with the synthesis, secretion, transport, binding, action, or elimination of natural hormones in the body that are responsible for development, behavior, fertility, and maintaining homeostasis." They are found in many household and industrial products [1,2]. Hormone disruptors can derail any hormone-controlled mechanism in the body. Endocrine disruptors, in particular, have been linked to learning difficulties, severe attention deficit disorder, and cognitive and brain development issues. Endocrine disruptors have sparked debate, with some groups pushing for regulators to act quickly to remove them from the market, while others, including regulators and scientists, have called for more research. Although certain endocrine disruptors have been found and removed from the market, it is unclear if other endocrine disruptors on the market are harmful to humans and wildlife at the doses to which they are exposed [3-5]. In addition, a pivotal scientific publication published in 1996 in the journal Science that helped establish the anti-endocrine disruptor movement was retracted after its author was revealed to have engaged in scientific misconduct. EDCs have been demonstrated in studies on cells and laboratory animals to have negative biological consequences in animals, and low-level exposures to EDCs may have similar effects in humans [6]. EDCs in the environment have been linked to reproductive and infertility difficulties in wildlife, and their use has been linked to a decrease in health problems and the recovery of some animal populations. Animals with endocrine systems can be found in a wide range of species. The endocrine system is made up of hormone-secreting glands and receptors that detect and react to the hormones.

Hormones are chemical messengers that flow throughout the body. Hormones interact with cells that have receptors in or on their surfaces that match [7,8]. The hormone binds to the receptor in the same way that a key does to a lock. The endocrine system uses hormones as messengers to govern modifications through slower internal processes. Hormones are produced by the endocrine system in response to environmental stimuli and to coordinate developmental and reproductive changes. The endocrine system makes biochemical alterations to the cell's internal and exterior chemistry, resulting in a long-term change in the body. These systems operate together to keep the body in good working order throughout its life cycle. Feedback regulation affects sex steroids like estrogens and androgens, as well as thyroid hormones, limiting the sensitivity of these glands.

Hormones are effective in extremely little dosages. Low-dose exposure to exogenous hormones or hormonally active compounds like bisphenol A can thus cause endocrine disruption. These chemicals have the ability to attach to receptors that are involved in other hormonally controlled activities. Furthermore, because endogenous hormones are already present in physiologically active concentrations in the body, even modest doses of exogenous hormonally active substances can impair the endocrine system's correct functioning. As a result, an endocrine disruptor, operating through a different mechanism, might cause harmful effects at far lower levels than a toxin.

References

[1] Wang F, Zhang H, Geng N, Zhang B, Ren X, Chen J. New insights into the cytotoxic mechanism of hexabromocyclododecane from a metabolomic approach. Environ Sci Technol 2016;50:3145-3153.

Contact: Bogli L, E-mail: Boglionee189@gmail.com

[2] Fischer LJ, Zhou HR, Wagner MA. Polychlorinated biphenyls release insulin from RINm5F cells. Life Sci 1996;59:2041-2049.

[3] Chow SZ, Speck M, Yoganathan P, Nackiewicz D, Hansen AM, Ladefoged M, et al. Glycoprotein 130 receptor signaling mediates α-cell dysfunction in a rodent model of type 2 diabetes. Diabetes 2014; 63:2984-2995.

[4] Carvalho-Filho MA, Ueno M, Hirabara SM, Seabra AB, Carvalheira JB, de Oliveira MG, et al. S-nitrosation of the insulin receptor, insulin receptor substrate 1, and protein kinase B/Akt: a novel mechanism of insulin resistance. Diabetes 2005;54:959-967.

[5] Grun F, Blumberg B. Perturbed nuclear receptor signaling by environmental obesogens as emerging factors in the obesity crisis. Rev Endocr Metab Disord 2007;8:161-171.

[6] Barker DJ. The origins of the developmental origins theory. J Intern Med 2007;261:412–417.

[7] Hernandez AF, Parron T, Tsatsakis AM, Requena M, Alarcon R, Lopez-Guarnido O. Toxic effects of pesticide mixtures at a molecular level: Their relevance to human health. Toxicology 2013;10:136–145.

[8] Vinggaard AM, Breinholt V, Larsen JC. Screening of selected pesticides for oestrogen receptor activation *in vitro*. Food Addit Contam 1999;16:533-542.