Endocrine Disruptors and their Harmful Health Implications: Between Old Thoughts and New Findings

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Editorial Note

Recently, there is an increase in public and scientific communities' attention concerning the effects of endocrine-disrupting chemicals on the reproductive and the endocrine systems. It is well known that the decline in human, livestock, and wildlife reproductive health is mainly caused by environmental pollution [1]. Many environmental chemicals, such as pesticides, have been experimentally demonstrated that they adversely affect the endocrine processes [2], known as endocrine disruptors (EDs). Endocrine disrupting chemicals are endocrine-modifying substances that have “weak intrinsic hormonal or anti-hormonal activity” [3] and affect the balance of normal hormonal functions [1,2]. Several studies regarding exposure to endocrine disruptors, specifically during prenatal and/ or postnatal growing stages, are published [4].

Accumulation of endocrine disrupting chemicals in soil, water [5], and air [6], from agriculture and industrial manufacturing could have profound deleterious effects on humans, livestock, and wildlife health through a disturbance of endocrine and reproductive systems. Previously, researchers thought EDs has estrogenic and anti-androgenic activity. In turn, EDs cause reproductive dysfunctions [7], but later they reported that EDs cause reproductive abnormalities [3], increased susceptibility to several diseases or even affect the epigenome later in adulthood [8,9].

Animals are vulnerable to endocrine-disrupting chemicals, such as pesticides, and their metabolites because they have been intensively used worldwide for pests control in veterinary farms in different formulations as contact, systemic, and fumigant formulas [10]. Furthermore, these chemicals cause a potential threat to human health due to the presence of their residues in animals’ products [11]. Consequently, the uncontrolled and the illegal use of pesticides increase humans, livestock, and wild animals’ exposure to toxicity, which exerts a variety of deleterious health impacts with severe environmental pollution.

In summary, the research field on the endocrine-disrupting chemicals is continuously growing. Therefore, further studies will be necessary to depict and understand precisely the possible cellular and molecular mechanism by which endocrine disrupters are able to cause deleterious effects. This is essential for formulating sound environmental policies, healthcare strategies, and appropriate decision-making.

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References