

## Abstract

Accumulation of endocrine disruptor chemicals (EDCs) in surrounding environment is a grave concern. These EDCs affects the reproductive, physiological and neurological functions of animals. Dibutyl Phthalate (DBP) is a potent EDC that is widely present in water, urban and agricultural land. It is extensively present in food packaging containers, cosmetics, consumer products, PVC material and toys. Its exposure may lead towards precocious puberty, infertility and disruption in synthesis and release of sex steroid. Reproductive development and functionality maintained by proper regulation of Hypothalamic- pituitary-gonadal axis (HPG axis), this axis is regulated by a neurotransmitter kisspeptin that induces the release of GnRH from hypothalamus. The neural regulatory organization in hypothalamus occurs during important developmental target window i.e. pre-pubertal period. Research regarding effect of DBP on expression of kisspeptin during this time is scarce, thus it is imperative to evaluate. For this purpose, three weeks old (n=30) female swiss albino mice randomly divided into 5 groups. Group N was control while Group A, B, C, D, were exposed to graded concentration of 100, 250, 500, 750 mg/kg in corn oil respectively for 21 days via oral gavage. Histopathological changes and expression of kisspeptin and GnRH in hypothalamus, ovaries and blood were determined after exposure. When compared with control it was inferred that expression of kisspeptin significantly enhanced at lower doses of 100, 250 and 500 mg/kg in dose dependent manner however at highest dose of 750 mg/kg there is a downward trend in kisspeptin expression. GnRH also showed similar expression trend as its production is induced by kisspeptin. Histopathological analysis has shown that DBP do not completely disrupts ovarian morphology, only mild effects were observed at high doses. Thus DBP disrupts HPG axis by altering kisspeptin expression, thus implicating negative consequences on the reproductive development and functionality of pre-pubertal female mice.

**Key words:** EDC DBP, HPG axis, Kiss1, GnRH