A REVIEW ON SPERM TOXICITY DUE TO ORGANOPHOSPHORUS COMPOUNDS

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Introduction*:* Organophosphorous (OP) compounds are the most commonly used group of pesticides for the control of agricultural plagues. It has been found that OPs have endocrine disrupting properties and among these properties, male reproductive disorders have attracted attention. This review raises concerns that exposure to OP pesticides cause to sperm changes.

Method*:* In this research 32 studies reviewed used different human epidemiological and animal approaches during the last 17 years. The epidemiological studies were on both occupational-like agricultural workers-and non occupational exposure. The most country included in this review are Mexico, United States and china. The type of most studies was cross sectional. About 62% of studies focused on sperm quality (sperm count, motility and concentration) and others on sperm genetics changes. None of the studies involved acute exposure events such as OPs accidents. An analytical study was performed and results were discussed.

Results*:* Both experimental and epidemiological studies reported that OP pesticide exposure was associated with decreased sperm concentration. This decline concentration depends on the volume of exposure and kind of OP, variable 30% to 60%. Studies have suggested that damage to the seminiferous epithelium by affecting germ cell proliferation is the mechanisms of OPs in affecting of sperm concentration. Sperm motility is another important factor that affected by OPs. Exposure to OPs such as dichlorvos and diazinon significantly impair motility in animal and human. A reduction in sperm motility in the Op-exposed rats attributed to both reduced mitochondrial enzyme activity and disruption of microtubule structure in spermatozoa. Investigations have also shown that OPs exposure lead to different levels of sperm genotoxicity. These disorders include alteration on sperm chromatin condensation, DNA integrity and cells at meiosis, increase in sperm DNA fragmentation, increased frequency of sperm aneuploidy and interference with sperm chromosome segregation.

Conclusion*:* These studies demonstrated that OPs exposure disrupts sperm function which was manifested by decreasing in sperm concentration and motility as well as sperm genotoxicity. So it can be suggest that sperm is a target of OPs toxicity and can be an important factor in fertility development.