ABSTRACT

In the last few decades, research has identified a number of chemicals that have adversely affected the endocrine system of our body and BPA is one of them. BPA is one of the most ubiquitous chemical in the modern life. Billions of pounds of this chemical are produced every year throughout the world. Every individual of this modern world is getting exposed to this chemical either through the food packaging, polycarbonate containers, canned food products, and also through dental sealants, plastic water pipes, dust and air. BPA has the tendency to leach from these containers and packaging in to the food and drinks, thus exposing population of every age group towards this chemical, a particular concern for women of childbearing age and for young children. The aim of this study was to evaluate the effect of BPA on Indian population and to determine the BPA levels in the blood samples of PCOS patients and healthy females. The leaching rate of BPA from plastic water bottles, canned food products, baby feeding bottles and microwave safe plastic bowls of different brands were analyzed using HPLC. The survey was conducted in which 200 subjects were included, 150 of them were PCOS patients and 50 were healthy females to determine the role of BPA in development of PCOS and hormone analysis of these subjects was also done. The level of BPA in blood samples of patients and healthy was using HPLC method to correlate with hormonal imbalance leading to PCOS. We found that: (a) Detectable levels of BPA were observed in the present study in all the samples of plastic ware and can as well. All the old and used feeding bottles leached higher concentration of BPA in to the water samples as compared to the newly purchased bottles except for the one sample (FB3) with concentration of 25.02, 35.32 and 26.91 mg/l of BPA. The newly purchased feeding bottles also showed leaching of BPA at concentration of 3.58, 19.63, 52.52, 2.8 and 5.27 mg/l of samples FB1, FB2, FB3, FB4 and FB5 respectively. B) In the survey it was observed that urban population was more dependent on the Plastic bottles than the rural population and mainly reproductive age group was using more plastic containers in urban area. It was also observed that food system is main route of exposure including canned food, beverages and milk products. C) Hormone analysis of PCOS female and Healthy female revealed that there is a significant difference between the levels of T3, TSH, FSH, LH/FSH and Testosterone. D) BPA level was found to be more in case of PCOS patients as compared to the healthy females. E) In the end of study it was concluded that there is a significant relation between the BPA level in Blood and
Hormone imbalance which might lead to PCOS in females. It is recommended that more research should be conducted related to exposure, dose dependent action and molecular mechanism involving in role of BPA in the development of PCOS.