

## Bisphenol-A Concentrations in Urine and Drinking Water Samples of Adults Living in Ankara

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**Abstract :** Drinking water is indispensable for life. With increasing awareness of communities, the content of drinking water and tap water has been a matter of curiosity. The presence of Bisphenol-A is the top one when content curiosity is concerned. The most used chemical worldwide for production of polycarbonate plastics and epoxy resins is Bisphenol-A. People are exposed to Bisphenol-A chemical, which disrupts the endocrine system, almost every day. Each year it is manufactured an average of 5.4 billion kilograms of Bisphenol-A. Linear formula of Bisphenol-A is  $(\text{CH}_3)_2\text{C}(\text{C}_6\text{H}_4\text{OH})_2$ , its molecular weight is 228.29 and CAS number is 80-05-7. Bisphenol-A is known to be used in the manufacturing of plastics, along with various chemicals. Bisphenol-A, an industrial chemical, is used in the raw materials of packaging materials in the monomers of polycarbonate and epoxy resins. The pass through the nutrients of Bisphenol-A substance happens by packaging. This substance contaminates with nutrition and penetrates into body by consuming. International researches show that BPA is transported through body fluids, leading to hormonal disorders in animals. Experimental studies on animals report that BPA exposure also affects the gender of the newborn and its time to reach adolescence. The extent to what similar endocrine disrupting effects are on humans is a debate topic in many researches. In our country, detailed studies on BPA have not been done. However, it is observed that 'BPA-free' phrases are beginning to appear on plastic packaging such as baby products and water carboys. Accordingly, this situation increases the interest of the society about the subject; yet it causes information pollution. In our country, all national and international studies on exposure to BPA have been examined and Ankara province has been designated as testing region. To assess the effects of plastic use in daily habits of people and the plastic amounts removed out of the body, the results of the survey conducted with volunteers who live in Ankara has been analyzed with Sciex appliance by means of LC-MS/MS in the laboratory and the amount of exposure and BPA removal have been detected by comparing the results elicited before. The results have been compared with similar studies done in international arena and the relation between them has been exhibited. Consequently, there has been found no linear correlation between the amount of BPA in drinking water and the amount of BPA in urine. This has also revealed that environmental exposure and the habits of daily plastic use have also direct effects a human body. When the amount of BPA in drinking water is considered; minimum 0.028  $\mu\text{g/L}$ , maximum 1.136  $\mu\text{g/L}$ , mean 0.29194  $\mu\text{g/L}$  and SD(standard deviation)= 0.199 have been detected. When the amount of BPA in urine is considered; minimum 0.028  $\mu\text{g/L}$ , maximum 0.48  $\mu\text{g/L}$ , mean 0.19181  $\mu\text{g/L}$  and SD= 0.099 have been detected. In conclusion, there has been found no linear correlation between the amount of BPA in drinking water and the amount of BPA in urine ( $r = -0.151$ ). The p value of the comparison between drinking water's and urine's BPA amounts is 0.004 which shows that there is a significant change and the amounts of BPA in urine is dependent on the amounts in drinking waters ( $p < 0.05$ ). This has revealed that environmental exposure and daily plastic habits have also direct effects on the human body.

**Keywords :** analyze of bisphenol-A, BPA, BPA in drinking water, BPA in urine

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