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A validated UPLC-UV method for bisphenol A (BP-A) levels detection in imported plastic toys and drinking bottled water in Kuwait

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Bisphenol A (BP-A) is an essential component of polyvinyl chloride, polystyrene, phthalates and polycarbonate plastics linked by ester bonds, and it can leach out of plastics at high temperature. BP-A is known to have an endocrine disrupting effect and recent studies have started to link its levels as causative factors in many diseases. Kuwait is considered as one of the hottest countries in the world, and measurements of BP-A levels due to leakage from plastics have never been reported. Therefore, this study measures the levels of BP-A in four randomly selected plastic toys and two plastic water bottles from two different companies after storage at 45°C for four days. An ultra-pressure liquid chromatography coupled with ultraviolet detector (UPLC-UV) analytical method was used to investigate BP-A levels in four of randomly chosen plastic toys (plastic tiger- plastic Lego blocks- plastic doll- small dolls) stored at 45°C for four days. The limit of detection (LOD) and the limit of quantification (LOQ) of the established analytical method were equal to 0.4 ppb and 1 ppb, respectively. BP-A levels was 239 ppb in plastic tiger, 30 ppb in plastic Lego, 4 ppb in plastic doll, 3 ppb in small dolls and 59 ppb in drinking bottled water. Surprisingly, BP-A was detected in all selected plastic toys and one out of two randomly selected drinking bottled water. Therefore, imported mineral water should be filled in a glass container rather than plastics due to high climate temperature. Moreover, toys manufacturers should use BP-A free plastics.

Biography

Naser Faisal Al-Tannak has completed his PhD from Strathclyde University, Glasgow, United Kingdom in 2012. Currently, he is an Assistance Professor at Department of Pharmaceutical Chemistry-Faculty of Pharmacy in Kuwait University. He has published eight peer reviewed papers in reputed journals.

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