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Distribution and risk assessment of polycyclic aromatic hydrocarbons in vegetables grown in pakistan
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Abstract
Distribution and risk assessment of eight priority polycyclic aromatic hydrocarbons (PAHs) contents have been examined in different varieties of vegetables grown in Pakistan. The results showed that the total PAH contents were higher for root vegetables like potato and carrot (13 μg/kg) and relatively lower for turnip (10.9 μg/kg), respectively while for the fruit vegetables, all the peels were found to be more contaminated than cores. The ratio of total PAH concentrations in peels with respect to those of cores is found to be 1.45, 1.26, 1.31, 1.44, 1.40, and 1.36 for potato, turnip, carrot, eggplant, cucumber, and bitter gourd, respectively. For leafy vegetables, cabbage showed maximum PAH (11.6 μg/kg) as compared to the cores of fruit vegetables. Among individual PAH congeners, anthracene showed higher levels in all vegetables. For benzo(a)anthracene, maximum concentration (3.44 ± 2.10 μg/kg) was encountered in turnip cores. Highest benzo(e)pyrene concentration was found in potato (3.19 ± 1.67 μg/kg) followed by turnip (2.74 ± 1.22 μg/kg). Benzo(b)fluoranthene and benzo(k)fluoranthene showed relatively lower levels in all samples studied. All the concentrations of PAHs are presented on a fresh weight basis. The results of human exposure of PAH by consumption of these vegetables showed that cumulative dietary exposure of Pakistani population to PAHs from vegetables ranges from 0.25 μg/p/d to 1.16 μg/p/d. © 2013 Mohammad W. Ashraf et al.

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