

# Xenobiotics in *Phaseolus vulgaris*<sup>†</sup>

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**Abstract:** Controlling the contamination of crop plants with pollutants has raised increasing interest in recent years; among the investigated pollutants, heavy metals and polycyclic aromatic hydrocarbons (PAHs) are of particular interest because some of them are remarkable for their toxicity and/or carcinogenicity. The main purpose of this paper is to establish the degree of contamination of *Phaseolus vulgaris*'s grains (Ardeleana variety) with the xenobiotics lead, cadmium, copper, zinc and 15 priority PAH in the conditions of experimental cultures carried out during three years in three locations with different pollution patterns: a reference field, a contaminated surface from diffuse sources and a site with historical contamination. PAHs' determinations were performed by high performance liquid chromatography on an Agilent 1100 system, while the heavy metals' content was determined by atomic absorption spectrometry using a Shimadzu AA6300 spectrophotometer. The obtained results revealed a higher share of low molecular weight PAHs, mainly naphthalene, fluorine, acenaphthene and anthracene, high molecular weight PAH contamination being due to benzo(a,h)anthracene, dibenzo(a,h)anthracene and indeno(1,2,3-c,d)pyrene. The content of PAHs was highest in the samples from the site contaminated from diffuse sources (6.03 mg total PAHs/kg), in the contamination mechanism predominantly intervening the atmospheric depositions loaded with combustion products. The highest content of heavy metals was recorded in samples from the site with historical contamination: 0.03 µg Pb/kg, 0.02 µg Cd/kg, 1.40 mg Cu/kg and 32.35 mg Zn/kg. Overall, the obtained results highlighted relatively low concentrations of the studied xenobiotics in *Phaseolus vulgaris* grains; these data may be useful in future studies dealing with human exposure on these pollutants.

**Keywords:** heavy metals; polycyclic aromatic hydrocarbons; *Phaseolus vulgaris* grains