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Pesticide residues in fruit samples on the market of the Republic of Serbia 2005/2007

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The fruit consumption nowadays is increasing around the world, almost 170 kg/person/year [1]. At present, the pesticides are widely used for fruit protection and their excessive use may be harmful to people's health so the content of their residues needs to be controlled. Our studies comprised the determination of the pesticide residues content in 297 fruit samples from the market of the Republic of Serbia taken during 2005-2007 (14 samples of blackberries, 16 samples of strawberries, 13 samples of plums, 182 of apples, 54 samples of raspberries and 18 samples of pears) by gas chromatography with NPD, ECD and GLC-MS. The samples were tested regarding the content of 75 pesticides, with LOD from 0.001 to 0.005 mg/kg. Out of 13 samples of plums in 4 of them the pesticide residues were not detected, while in the others procymidone, vinclozolin, endosulfan with methidathion, cypermethrin, lambda-cyhalothrin, furadan and Σ DDT+methidathion were present. All the obtained values were below the EU MRLs. In 182 samples of apples 56.59% did not contain pesticide residues while 25.32% samples contained endosulfan. Out of 7 samples positive to parathion 5 of them contained parathion residues over the EU MRLs. The two other samples contained lambda-cyhalothrin and procymidone respectively over the EU MRLs. The analyzed samples of blackberries had the highest content of the residues of dithiocarbamate 64.29%, chlorpyrifos 57.14% and vinclozolin 35.17% within the limits of the EU MRLs, while in two samples the residues were not detected. Out of 16 samples of strawberries two of them were without pesticide residues. Chlorpyrifos was detected in 9 samples out of which 2 were over the EU MRLs, dithiocarbamate were detected in 8 samples and out of 7 samples with parathion residues 3 of them contained residues over the EU MRLs. One sample positive to cypermethrin and five samples positive to dimethoate had the values over the EU MRLs. The pesticide residues were not detected in 48.15% samples of raspberries whereas the most frequently detected were dithiocarbamate, procymidone, lambda-cyhalothrin, captan and fludioxonil. In 30 % samples with the detected procymidone, 33.33% of samples with endosulfan and methidathion and one sample with the detected methidathion the residue values were over the EU MRLs. Out of 18 samples of pears one sample was pesticide free while the most detected residues of dithiocarbamate, cypermethrin, and Σ DDT+methidathion were below the tolerable levels.

A high percentage of positive samples to the pesticide residues content is a warning that in production a continuous and multilevel monitoring of food safety must be kept aiming at the successful prevention of harmful pesticide effects on human and animal health.

References

- [1] Gebara, A.B., Ciscato C.H.P, Monteiro S.H., Viera, E., Ribeiro, D.H.B; 5th MGPR International Symposium of Pesticides in Food and the Environmental in Mediterranean Countries, Agadir, Morocco, 21-24 November 2007, Book of abstracts (2007) 62