Distribution of multiple pesticide residues in apple segments after home processing

The effects of washing, storing, boiling, peeling, coring and juicing on pesticide residue were investigated for field-sprayed Discovery and Jonagold apples. Residues of chlorpyrifos, cypermethrin, deltamethrin, diazinon, endosulfan, endosulfan sulfate, fenitrothion, fenpropatrin, iprodione, kresoxim-methyl, lambda-cyhalothrin, quinalphos, tolylfluanid and vinclozolin in the processed apples were analysed by gas chromatography. Statistical analysis showed that reductions of 18-38% were required to obtain significant effects of processing practices, depending on pesticide and apple variety. Juicing and peeling the apples significantly reduced all pesticide residues. In the case of detectable pesticide residues, 1-24% were distributed in the juice and in the peeled apple. None of the pesticide residues was significantly reduced when the apples were subject to simple washing or coring. Storing significantly reduced five of the pesticide residues: diazinon, chlorpyrifos, fenitrothion, kresoxim-methyl and tolylfluanid, by 25-69%. Residues of the metabolite endosulfan sulfate were increased by 34% during storage. Boiling significantly reduced residues of fenitrothion and tolylfluanid by 32 and 81%, respectively. Only a few of the observed effects of processing could be explained by the physical or chemical characteristics of the pesticides. No differences in effect of processing due to apple variety were identified.

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