

生薬煎液中の残留有機リン系農薬

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Organophosphorus Pesticide Residues in Decoctions of Crude Drugs

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Summary

In our investigation on residues of 22 organophosphorus pesticides in commercial crude drugs, parathion and parathion-methyl were detected in *Perillae Herba*, and chlorpyrifos, fenitrothion, methidathion and quinalphos were detected in *Aurantii Nobilis Pericarpium*. In Japan, these crude drugs are mainly used as components of *Kampo* formulae. Since extracts and decoctions are normally used as their dosage form, we determined the amounts of these pesticides in the decoctions and the herbal residues.

Parathion and parathion-methyl remained mostly in *Perillae Herba* after decoction.

Chlorpyrifos and quinalphos remained mostly in *Aurantii Nobilis Pericarpium* after decoction. In the case of fenitrothion and methidathion, only 40% and trace amounts were detected in the residues, respectively, but none was detected in the decoctions.

In order to clarify this result, we conducted recovery tests of the pesticides spiked in water after the solutions had been concentrated to half of the original volume by heating. The recoveries of fenitrothion and methidathion were 35% and 13%, respectively, while the recoveries of the other pesticides were mostly less than 56%. Therefore, it is concluded that considerable amounts of these pesticides disappear from the decoction during the concentration process, even if the pesticides are transferred to the water from the crude drugs.

The residual amounts of organophosphorus pesticides in herbal medicines are normally regulated in terms of the level in the crude drugs themselves. However, it might be better to regulate them based on the level in *Kampo* extracts in Japan, because most crude drugs are used as *Kampo* extracts and the amounts of residual pesticides decrease during the decoction process.

Key words

Decoction of crude drugs, Organophosphorus pesticide, Pesticide residue, *Perillae Herba*, *Aurantii Nobilis Pericarpium*, Parathion, Parathion-methyl, Chlorpyrifos, Fenitrothion, Methidathion, Quinalphos, GC-FPD