

## 漢方処方煎液の乾燥工程における残留有機リン系農薬の消長

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(受付:平成22年5月10日, 受理:平成22年8月13日)

Fate of Residual Organophosphorus Pesticides in Decoction  
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## Summary

During quality evaluation of crude drugs, we have sometimes detected residual organophosphorus pesticides in them. In our previous study, we prepared 3 Kampo decoctions using crude drugs contaminated with organophosphorus pesticides and quantified the concentrations of the pesticides in the decoctions to evaluate the migration rates from crude drugs to decoctions. The migration rates were less than 28% for Hangekobokuto decoction.

In Japan, about 90% of crude drugs are used as raw materials for Kampo dry extracts prepared from industrial decoctions. Therefore, in the present work, we investigated the fate of organophosphorus pesticides in a decoction based on a Kampo formula during the drying process. In the present work, we first prepared a decoction of Hangekobokuto by utilizing Perilla Herb contaminated with parathion and parathion-methyl, and then freeze-dried or spray-dried the supernatant after centrifugation. The pesticide residues in the dried extract and the removed herbal residue were measured by GC-FPD.

The organophosphorus pesticide contents in the freeze-dried and spray-dried extracts were 43% (for both parathion and parathion-methyl) and less than 10% (parathion: 6.7%, parathion-methyl: 8.9%) of those in the decoction, respectively. On the other hand, 36% of parathion and 16% of parathion-methyl remained in the herbal residue obtained by centrifugation. These data suggest that substantial amounts of pesticides in the decoction were decomposed or vaporized during the drying process. It was calculated that more than 85% of residual organophosphorus pesticides contained in the original crude drug, Perilla Herb, is removed during the decoction and drying process. The final pesticide residue levels in the freeze-dried and spray-dried extracts were 10~14% and 2~3% of those in Perilla Herb, respectively.

## Key words

Decoction, Drying process, Hangekobokuto, Residual Organophosphorus Pesticide, Parathion, Parathion-methyl, Perilla Herb