

## Analysis of Pesticide residue (Chlorothalonil) in Spinach

### INTRODUCTION

Chlorothalonil is a pesticides used as a disinfectant. The standard value for the residue in farm products is specified as shown in the table below by the Food Sanitation Law. This time, by using the analysis kit which allows simple and rapid preparation, chlorothalonil in spinach was assayed. The addition recovery test at 1/10 of the concentration for the standard (0.4 ppm) showed that the recovery was  $103 \pm 11$  %. Thus, it was confirmed that the highly sensitive assay is possible.

#### METHOD

Analyte : Chlorothalonil (organochlorine disinfectant)  
 Measurement method : Pesticide residue analysis by ELISA (immunoassay)  
 Reagent : Pesticide residue analysis kit by HORIBA, Ltd.  
           "SmartAssay series analysis kit for chlorothalonil"  
           pH-adjusting reagent by HORIBA, Ltd.  
 Assay range : 0.15 - 1.5 ppb

#### PREPARATION

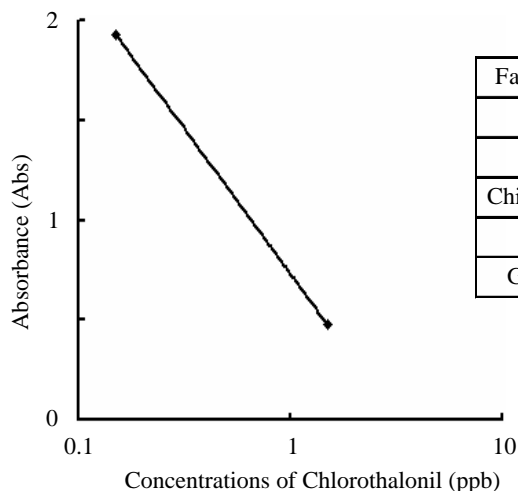
Refer to the following pages.  
 (Sheet No. UV080019-02, UV080019-03)

#### INSTRUMENT CONDITIONS

INSTRUMENT : U-1900                      WORKING CURVE  
 BANDPASS : 4 nm  
 WAVELENGTH : 450 nm

#### OTHER INSTRUMENTS

Micro cell  
 (P/N : 130-0622)  
 Micro cell holder  
 (P/N : 3J0-0102)



#### Standard values for chlorothalonil in farm products\*

Farm products	Standard value (ppm)	Farm products	Standard value(ppm)
Spinach	4	Cucumber	5
Cabbage	2	Tomato	5
Chinese cabbage	2	Green pepper	7
Lettuce	1	Apple	2
Green onion	5	Strawberry	8

\* As of 2009/03/01

The standard values may be changed. Please confirm the latest standard values in the webpage of MHLW, etc.

#### Addition Recovery Test (Added at the standard value)

Spinach	Spinach + 4 ppm	Recovery
ND	$3.81 \pm 0.28$ ppm	$95 \pm 7$ %

ND : Non detectable, n = 3  
 Analyzed after diluted to 5000 times

#### Addition Recovery Test (Added at 1/10 of the standard value)

Spinach	Spinach + 0.4 ppm	Recovery
ND	$0.41 \pm 0.05$ ppm	$103 \pm 11$ %

ND : Non detectable, n = 3  
 Analyzed after diluted to 500 times

#### KEY WORDS

Bio·Medical Science·Food·Pharmaceutical Related, Pesticide, Food, Chlorothalonil, TPN, Organochlorine Disinfectant, Pesticide Residue, ELISA Method, Immunoassay Spinach, Analysis Kit, Calibration Curve, Micro Cell, Curve, UV, U-1900, U-2900, U-2910, U-3900, U-3900H, U-1800, U-2800, U-3010, U-3310

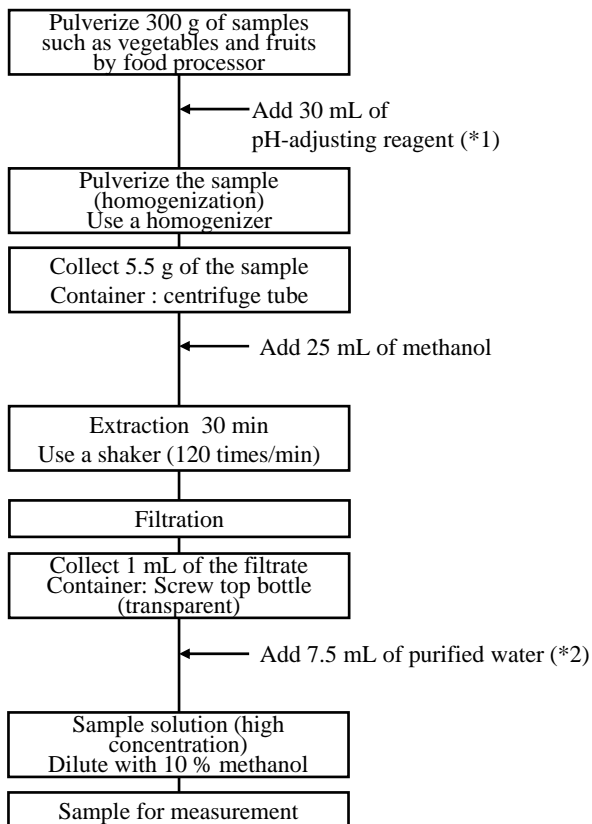
Spectrophotometer (UV)

Sheet No.    UV080019-01

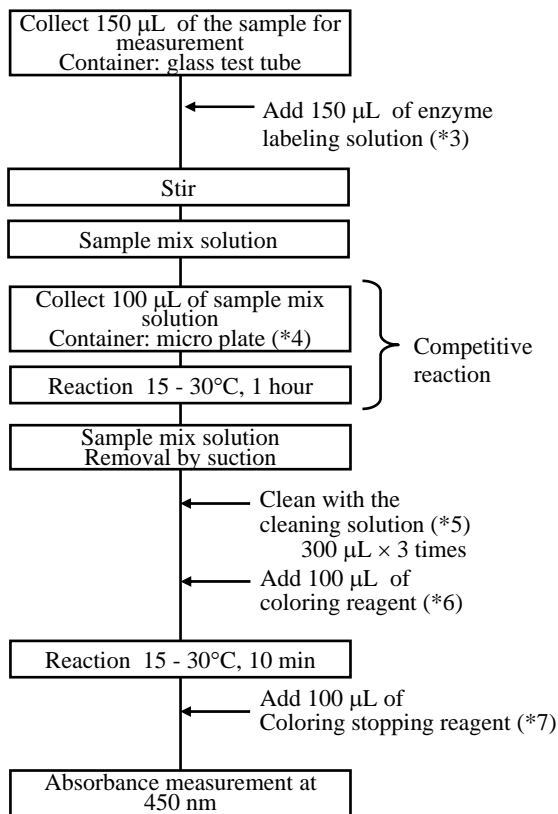
## Pretreatment for Analysis of Pesticide residue (Chlorothalonil)

### [Pretreatment Method for Sample Solution]

#### [1. Preparation of Sample Solution]



#### [2-1. Preparation of Sample for Measurement]



\*1 : pH-adjusting reagent for chlorothalonil analysis

\*2 - \*7 : Pesticide residue analysis kit, SmartAssay series analysis kit for chlorothalonil

- For the operative methods for \*1 - \*7, check the instructions for each reagent.
- Please contact HORIBA for the effects of the interfering substances and details of the reagents when using the reagents.

#### KEY WORDS

Bio·Medical Science·Food·Pharmaceutical Related, Pesticide, Food, Chlorothalonil, TPN, Organochlorine Disinfectant, Pesticide Residue, ELISA Method, Immunoassay, Spinach, Analysis Kit, Calibration Curve, Micro Cell, Curve, UV, U-1900, U-2900, U-2910, U-3900, U-3900H, U-1800, U-2800, U-3010, U-3310

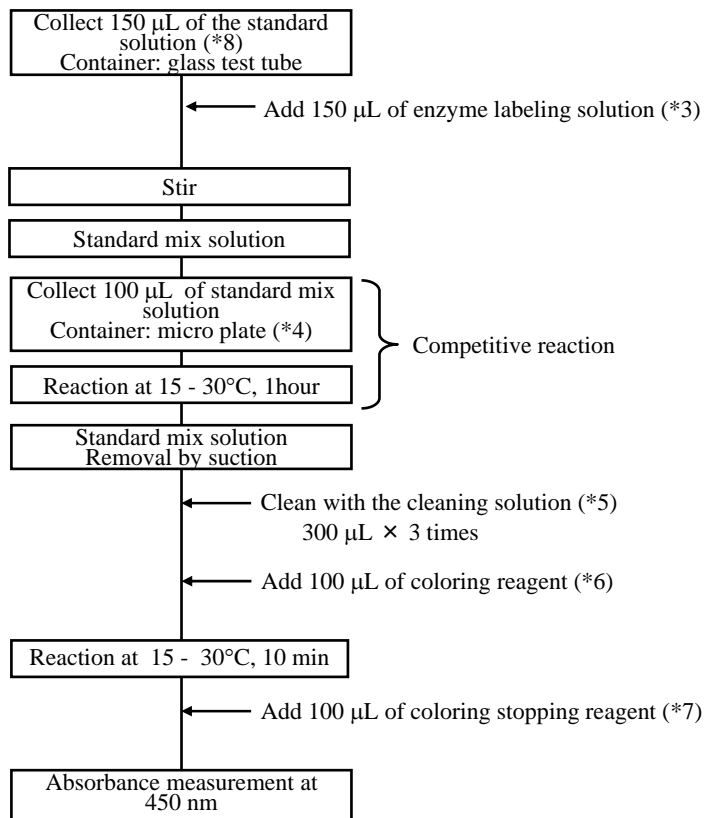
Spectrophotometer (UV)

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## Pretreatment for Analysis of Pesticide residue (Chlorothalonil)

[Pretreatment of Solutions for Calibration Curve]

[2-2. Pretreatment of Solutions for Calibration Curve]



\*3 - \*8 : Pesticide residue analysis kit, SmartAssay series analysis kit for chlorothalonil

- For the operative methods for \*1 - \*7, check the instruction for each reagent.
- Please contact HORIBA for the effects of the interfering substances and details of the reagents when using the reagents.

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Spectrophotometer (UV)

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