



ชุดตรวจหาสารเคมี กำจัดแมลง



GPO-TM/2 KIT

(For detection of 2 pesticide compound residues in vegetables, fruits, and whole grain)

Pesticide compounds: **ORGANOCHLORINE AND PYRETHROIDS**

Manufacturer: The Government Pharmaceutical Organization

Objective: To detect pesticide compound residues (Organochlorine and Pyrethroid) in vegetables, fruits, and whole grain.

Detection principle: Separation of pesticide compounds by using TLC (Thin Layer Chromatography), chemical reaction and UV light (254 nm) exposure to form color. If sample contains Organochlorine and Pyrethroid compounds, a gray- brown to black spot will be detected on TLC sheet.

Chemical substances:

	10 Tests		30 Tests	
1. Extraction solution	1	bottle	3	bottles
2. GPO TM 4 solution	1	bottle	3	bottles
3. GPO TM 5 solution	1	bottle	2	bottles
4. GPO TM 5.1 solution	1	bottle	1	bottle

Testing equipment

1. GPO-TM/2 TLC sheet (6 slits / sheet)	2	sheets	6	sheets
2. Capillary tube	10	tubes	30	tubes
3. Plastic dropper (3 ml)	2	tube	2	tubes
4. Plastic dropper (1 ml)	1	tube	1	tube
5. Instruction Manual	1	set	1	set

Additional equipment needed

1. Warm water bath (with adjustable temperature at 48 ± 2 °C with wire mesh rack.
2. UV ray box (UV 254 nm)
3. TLC Tank
4. Metal cup
5. Bottle with dropper (for sample)
6. Knife and cutting board (for cutting sample)
7. Forceps
8. TLC tray
9. Gloves
10. Stopwatch

Preparation of testing solutions

Use dropper to draw 10 ml of GPO TM 5 solution and 2 ml of GPO TM 5.1 solution into TLC tank, shake well to thoroughly mix and leave the mixture for at least 30 minutes before starting the test.

Testing Procedure

1. Preparation and Extraction of samples



1.1 Preparation of samples

- For vegetables and fruits such as Chinese kale, Chinese cabbage, cabbage, and yard long bean : Finely chop the sample to obtain 5 gm or having approximate quantity at 5th mark level of the sample bottle.
- For juicy vegetables and fruits such as cucumber, tomato, orange: Coarsely chop the sample to obtain 2.5 gm or having approximate quantity at 3rd mark level of the sample bottle.
- For whole grain such as dried beans and local vegetables such as coriander, parsley, neem, acacia, finger root, chili : Finely grind the sample to obtain 0.5 gm.



1.2 Use plastic dropper to draw 5 ml of Extraction solution into bottle of sample from 1.1, shake well for 1 minute and leave for another 5 minutes to obtain complete extraction.

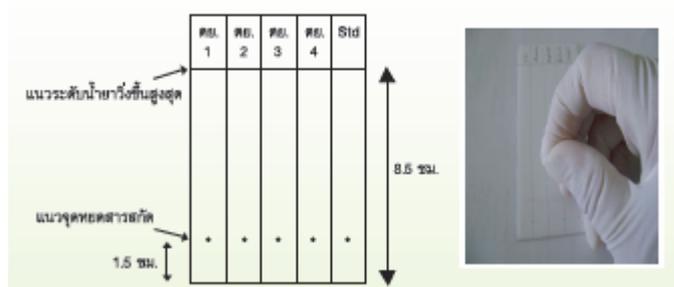
2. Evaporation

Use plastic dropper to draw 1 ml of Extract solution (clear layer) from 1.2 and put into metal cup on the rack of warm water baht, then leave $48 \pm 2^\circ\text{C}$ until the solution is almost evaporated (approximately 2 drops left).



3. Testing Procedure

3.1 Label name of samples on the upper end of GPO/TM-2 TLC sheet. Avoid direct hand touch to the sheet which may cause contamination of fat stain that can interfere the result interpretation.



- 3.2 Use capillary tube to draw extract from No.2. If the solution in the cup is dried out, add another 2 drops of Extraction solution and lean the cup from side to side to dissolve the dried substance. Spot extract from the capillary tip on the spot point (at the bottom end) on GPO-TM/2 TLC sheet once, then raise the capillary up and wait to air dry, then repeat spotting for another 4-6 times until the extract is finished.
- 3.3 Carefully use forceps to put GPO-TM/2 TLC sheet from 3.2 into TLC Tank and gradually lean it against the inner wall, then close the tank cover and leave stable.
- 3.4 Let the solution diffuse upward until reaches solvent front line. Open the cover, and use forceps to pinch TLC sheet out and leave to air dry.

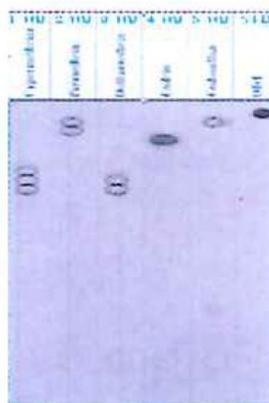
4. Color Test

- 4.1 Spray GPO TM 4 Solution over GPO-TM/2 TLC sheet from 3.4 (leave spray distance between 4-5 inches) until surface is all wet and leave to air dry for 1 minute.



- 4.2 Take TLC sheet to expose to UV light at 254 nm for 3-5 minutes (be aware of burning if exposing too long) and interpret the result.

5. Interpretation



Positive : If gray, brown to black spot is detected on the GPO-TM/2 TLC sheet, it means there are organophochlorine and pyrethroid compound residues in the sample.

Negative: If no spot on GPO-TM/2 TLC sheet is detected, it means the sample contains no organophochlorine and pyrethroid compound residues.

Result Interpretation

Name of Standard reagent	LOD (mg/kg)	RF value (Standard reagent)
1. Cypermethrin	3.1	0.5, 0.53, 0.58
2. Permethrin	1.9	0.71, 0.83
3. Deltamethrin	2.2	0.91
4. Endrin	0.3	0.82
5. Endosulfan	0.73	0.89
6. DDT	0.19	0.94

Cautions and Storage

1. The test should be conducted in airy room and avoid exposure to source of direct heat and flame.
2. All chemical substances are dangerous; avoid direct inhalation or direct contact.
3. In case of skin contact with chemical solutions, immediately wash with of water. In case of eye contact, immediately wash with plenty of water and seek immediate medical attention.
4. Keep the test kit out of reach of children and store in a room with good ventilation.

Storage Condition : Keep at room temperature

