

## TruStrip™ Potato Virus Y Rapid Test

*A one step test for the detection of Potato Virus Y in Plant extracts*

### Introduction

Potato virus Y (PVY) is a pathogenic plant virus belonging to the family Potyviridae. PVY infection of potatoes results in a variety of symptoms. The most common symptoms include stunting, leaf mottling, crinkling, yellowing, and necrosis. The most detrimental symptom is 'Potato tuber necrotic ringspot disease' (PTNRD). PVY is transmissible by aphid vectors but may also remain dormant in seed potatoes. PVY infects many important plant species such as potatoes, tobacco, tomatoes, and pepper. PVY may be transmitted to potatoes through grafting, plant sap inoculation, and aphid transmission.



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**Intended for In Vitro Diagnostic Use only. The manufacturer warrants the kit for its intended use. Alpha Diagnostic International's liability is limited to the value of the kit. Alpha Diagnostic International is not liable for any loss of profit, contracts, or business relating to the use of the product.**

### Principle of the test

The Potato Virus Y rapid test is a qualitative sandwich assay. The test contains a nitrocellulose membrane which is pre-coated with antibodies to PVY on the test line region of the strip. A separate strip contains PVY antibodies conjugated to gold nanoparticles. As plant extracts are applied to the strip, they migrate upwards by capillary action which causes the PVY antibodies to be released. The PVY antibodies in the presence of the virus will form a "sandwich" between the virus resulting in the appearance of a red/pink line in the test line region. If no virus is present, the antibodies will not form a sandwich and no line will appear in the test line region. The intensity of the test line region is proportional to the titer of the virus present in the sample. A control line is included which shows that the assay was performed correctly, and the reagents are active. A control line should appear whether or not virus is present in the sample.

### Precautions

- Do not use the test after the expiration date
- Do not re-use the test
- Wear protective clothing such as disposable gloves when specimens are being tested
- Handle all specimens as if they contain infectious agents. The cassette should be disposed according to federal, state, and local regulations
- Humidity and temperature can adversely affect results
- Use the test within 30 minutes of opening the foil pouch

### Storage and stability

The kit can be stored at room temperature or refrigerated (2-25°C/35-77°C). Do not freeze. The test cassette must remain in the sealed pouch until use. The kit is stable until the date printed on the pouch. The minimum guaranteed shelf-life is 15 months with an expiration date of up to 2 years.

### Kit contents

#### Materials provided:

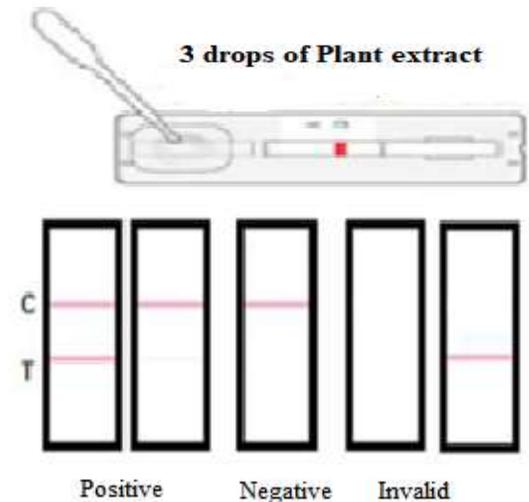
- 1) Test cassettes
- 2) Transfer pipettes
- 3) Microcentrifuge tube containing extraction buffer
- 4) 5 disposable pestles
- 5) One bottle containing extra extraction buffer

**For users testing samples which are difficult to grind, we recommend using a mortar and pestle (not supplied). Please contact ADI to have larger volumes of extraction buffer to use with a mortar and pestle.**

### Directions for use

**Allow the test cassette to come to room temperature (15-25°C/59-77°F) prior to testing.**

1. Remove the test cassette and transfer pipette from the foil pouch. Lay the device on a flat and dry surface.
2. Use the transfer pipette to transfer the sample by depressing the bulb of the pipette. Dispense 3 drops to the test cassette
3. Begin a timer for **10 minutes**, at 10 minutes observe the results. Do not interpret the results after 15 minutes. Positive results may be visible as soon as a few seconds.



### Interpretation of results

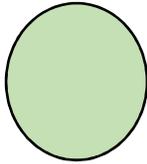
**Negative:** One line appears in the Control line region (C). This indicates that there is no Potato Virus Y in the plant extract, or it is below the detection limit of the test.

**Positive:** Two lines appear, one in the Control Line region (C) and one in the Test line region (T). The intensity of the test line is proportional to the titer of the virus in the sample.

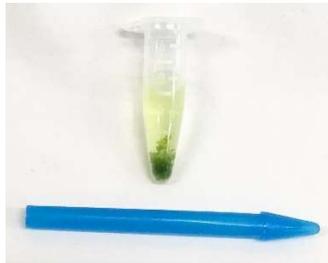
**Invalid:** A control line fails to appear. Insufficient specimen volume or incorrect procedural technique are the most likely cause. Check the expiration date. Repeat the test with a new cassette. If the problem persists, discontinue using the kit and contact the manufacturer.

## Sample Preparation

- 1) Weight out approximately 0.02 grams or 20 milligrams of tissue and place into the snap cap tube filled with buffer. If a weighing scale isn't available, the tissue will be approximately the size of the circle below. Be cautious and use sterile cutting blades to avoid cross-contamination as plant viruses can be mechanically transmitted.



- 2) Insert the tissue into the microcentrifuge tube, it may help to fold it before inserting it. Grind the tissue by twisting the pestle against the wall or by tapping the tissue towards the bottom end of the tube, the extract should be a light green/brown color (see picture below). Do not overly grind the tissue to a dark green color. Allow the extract to sit 1-2 minutes to let the plant debris settle at the bottom. If available, the extract can be centrifuged at 1,000 RCF for 1 minute to pellet debris.



- 3) Using the transfer pipette supplied in the foil pouch, transfer 3 drops of the extract to the test cassette.



## Sensitivity

The sensitivity of the assay was determined by spiking recombinant Potato virus Y into healthy plant extracts and run in replicates. The limit of detection of the assay was determined to be approximately 500 picograms/milliliter.

## Hook effect

The single step format of lateral flow assays is susceptible to the hook effect. The hook effect is when high concentrations of antigen saturate both capture and detection antibodies leaving them unable to form a sandwich and a result of a weak or no test line is seen. If a plant is exhibiting significant symptoms of the virus but is testing negative, it is recommended to dilute the extract 10-fold or more and re-test. If the test line appears more intense, than a hook effect has occurred.

## Troubleshooting

**The test line is green:** Generally caused by using too much tissue or overgrinding the sample to a dark green color. Repeat the test with less tissue or dilute out the sample

**Test does not run:** Can be caused by using too much tissue or overgrinding the sample to a dark green color. Repeat the test with less tissue or dilute out the sample

**False negative:** The virus may not spread evenly or be located on the symptomatic area. Test the surrounding healthy tissue as well as symptomatic areas.

## Related items available from Alpha Diagnostic International

Catalog#	Description
POTY-096 Quantitative	Potato Virus X ELISA Kit, 96 tests,
TMV-RDT-5	TruStrip Tobacco Mosaic Virus test kit
TMV-096 tests, Quantitative	Tobacco Mosaic Virus ELISA Kit, 96
PVX-RDT-5	TruStrip Potato Virus X Virus test kit
POTX-096 Quantitative	Potato Virus X ELISA Kit, 96 tests,
CMV-RDT-5	TruStrip Cucumber Mosaic Virus test kit
CMV-096 tests, Quantitative	Cucumber Mosaic Virus ELISA Kit, 96