Product Information: DAS-ELISA

Tomato apex necrosis virus (ToANV)

Synonym: Torradovirus marchitezum

ToANV, a recently described virus in Mexico (4), is causing severe symptoms on tomato resembling those caused by Tomato spotted wilt virus, such as malformation and necrosis of the apex, necrosis on leaves and stems, stunting, as well as necrotic rings on fruits. Especially early infections are causing important yield losses and may even destroy the crop. Other solanaceous plants such as tomatillos (Mexican husk tomato, *Physalis philadelphica*) are also infected. The virus is synonymous to Tomato marchitez virus (ToMarV) (5), and has been classified in the newly proposed genus *Torradovirus*. ToANV has been reported in North America (where it is on the quarantine list), and as a new record by EPPO Service (3). ToANV is efficiently transmitted by Bemisia tabaci, (Bryce Falk and Massimo Turina, *personal communication*; and 1).

Specificity and sampling instruction

The DAS-ELISA reagents (2) contain antibodies developed against purified virus of a tomato isolate from plants expressing strong necrotic symptoms (4). The reagents specifically react with ToANV in DAS-ELISA. All isolates tested so far have been detected. A weak cross reaction with other Torradoviruses can occur. For testing tomatoes or tomatillos, leaf samples are homogenized 1:20 (w/v) in extraction buffer «General» (Art. No. 110120).

The product is based on antibodies from the National Research Council (Institute for Sustainable Plant Protection), Torino, Italy. Specificity was tested at UC Davis, California, USA.

Information on the antibodies

Coating IgG: polyclonal; conjugate: polyclonal

References

(1) Barajas-Ortiz, M., Leon-Sicairos, CR., Lopez-Valenzuela, JA., Reyes-Moreno, C., Valdez-Ortiz, A., Velarde-Félix, S., Peraza- Garay, F., and Garzon-Tiznado, JA. 2013. Transmission efficiency of tomato apex necrosis virus by Bemisia tabaci (Hemiptera: Aleyrodidae) Biotype B in tomato. J. Econ. Entomol. 106(4): 1559-1565.

(2) Clark, M.F., and Adams, A.N. 1977. Characteristics of method of enzyme-linked immunosorbent assay for the detection of plant viruses. J. gen. Virol. 34:475-483.

(3) EPPO reporting Service, No. 4, 2008-04-01 (The Tomato "marchitez" disease in Mexico is caused by a new virus, record 2008/080).

(4) Turina, M. Ricker, M.D., Lenzi, R. Masenga, V, and Ciuffo, M. 2007. A severe disease of tomato in the Culiacan area (Sinaloa, Mexico) is caused by a new Picorna-like viral species. Plant Dis. 91:932-941.

(5) Verbeek, M., Dullemans, A.M, Van den Heuvel, J.F.J.M., Maris, P.C., and Van der Vlugt, R.A.A. 2008. Tomato marchitez virus, a new plant picorna-like virus from tomato related to tomato torrado virus. Arch. Virol. 153: 127-134.

Ordering Information

BIOREBA offers the following formats:

Individual ELISA reagents for 100, 500 or 1000 assays: IgG and/or conjugate for the working volume of 200 µl/test/well.

Reagent sets for 480 or 960 assays: IgG and conjugate, positive and negative controls, and microtiter plates (F-96) for a working volume of 200 µl/test/well.

Complete kits for 96, 480 or 960 assays: All reagents, controls, microtiter plates (F-96), buffers, and substrate necessary for a working volume of 200 µl/test/well.

ELISA buffers, equipment for sample preparation and disposables are also available.

For all Art. No. please refer to our product catalogue or our homepage www.bioreba.com and for prices and further information on any other product from BIOREBA, please contact your local distributor or our office in Switzerland.

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Version: 4 - 09.05.2025
Adaptations from last version: added revised taxonomy of ICTV and assays of individual ELISA reagents.

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