

# Structure-Activity Relationship Study of Host-Specific Phytotoxins (AM-Toxin Analogs) Using a New Assay Method with Leaves from Apple Meristem Culture

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Z. Naturforsch. **56c**, 1029–1037 (2001); received May 2/July 23, 2001

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Host-Specific Toxin, Cyclic Depsipeptide, Meristem Culture

AM-toxins are host-specific phytotoxins of the *Alternaria alternata* apple pathotype, which induce necrosis on apple leaves. In this study, we developed a new assay to measure the necrotic activity of AM-toxin analogs using cultured leaves from meristem cells. This method was not only more sensitive to AM-toxin I, but also more reliable than the previous one that used tree leaves due to the homogeneous nature of cultured leaves and to the method of application of toxins. Using this assay method we investigated a structure-activity relationship of AM-toxin analogs synthesized in this study. Most residues and the macrocyclic ring structure were strictly recognized by AM-toxin putative receptor, whereas the L-Ala binding subsite of the receptor allowed for side chain structures with various stereoelectronic properties. These findings are important for designing ligands for further experimental probing of the nature of the receptor.