

History and sensitivity comparison of the



The history of toxicity tests with duckweeds shows that these assays with free-floating aquatic angiosperms are gaining increasing attention in ecotoxicological research and applications. Standard tests have been published by national and international organizations, mainly with the test species *Lemna minor* and *Lemna gibba*. Besides the former two test species the great duckweed *Spirodela polyrhiza* is to date also regularly used in duckweed testing. Under unfavorable environmental conditions, the latter species produces dormant stages (turions) and this has triggered the attention of two research groups from Belgium and Greece to jointly develop a "stock culture independent" microbioassay with *S. polyrhiza*. A 72 h new test has been worked out which besides its independence of stock culturing and maintenance of live stocks is very simple and practical to perform, and much less demanding in space and time than the conventional duckweed tests. Extensive International Interlaboratory Comparisons on the *S. polyrhiza* microbioassay showed its robustness and reliability and triggered the decision to propose this new assay to the ISO for endorsement and publication as a standard toxicity test for duckweeds. Sensitivity comparison of the 72 h *S. polyrhiza* microbioassay with the 7d *L. minor* assay for 22

compounds belonging to different groups of chemicals revealed that based on growth as the effect criterion both duckweed assays have a similar sensitivity. Taking into account its multiple advantages and assets, the *S. polyrhiza* microbioassay is a reliable and attractive alternative to the conventional duckweed tests.

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