

from the leaders
in genotoxicity

MOLTOX, USA

KRISHGEN BioSystems

OUR REAGENTS. YOUR RESEARCH.

MOLTOX[®]
Molecular Toxicology, Inc.

UMU Genotoxicity Test Kit

MOLTOX[®] UMU Genotoxicity Test Kit protocol was adapted from ISO 13829 “Water Quality- Determination of the genotoxicity of water and waste water using the UMU test”.

The MOLTOX[®] UMU Kit provides components to perform both aqueous and chemical tests based on the user’s needs.

This includes sufficient materials to test for 6 unknowns in triplicate analysis of 4 concentrations, with and without S9.

Salmonella typhimurium TA1535 (*hisG46*, *rfa*, *uvrB*) has been modified to contain the plasmid pSK1002. This plasmid contains the gene *umuC* fused to a *lacZ* reporter gene. If genetic lesions are formed when exposed to potentially genotoxic compounds, the *umuC* gene is induced as part of the bacterial SOS response. Due to the *lacZ-umuC* fusion and the accompanying *lacZ*-encoded β -galactosidase activity, genotoxic induction can be detected by the colorimetric change of ONPG substrate (colourless) to o-nitrophenol (yellow).

EXAMPLE APPLICATIONS OF THE MOLTOX UMU KIT

- Testing of pharmaceuticals for genotoxic activity.
- Testing of industrial effluents for presence of possible genotoxic compounds.
- Screening of municipal discharges for possible routine presence or spills of genotoxic compounds.
- Screening of surface and ground water for genotoxic residues.
- Screening of potable water supplies for the presence of chemicals with genotoxic potential.
- Screening of water soluble air pollutants for genotoxic agents.
- Evaluation of pure or complex raw mixtures for potential genotoxicity.
- A convenient and easy to use teaching look for university and college laboratories.



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The test uses a single strain of bacteria, however, it can detect a number of different types of mutations, and closely matches results from the traditional Ames test (approximately 90% agreement).

The Umu test is rapid, simple, highly reproducible and represents significant reductions in material expenses and labour compared to the Ames test and other methods and has been promoted as a new standard for screening purposes by a number of leading scientists.



S9 ACTIVATION ENZYMES

As required for reverse mutation bacterial tests, all bacteria should be tested in the presence and absence of an appropriate metabolic activation system. MOLTOX uses the most commonly used system. This is a cofactor supplemented post-mitochondrial fraction prepared from the Sprague-Dawley male rat liver. The rats are treated with the enzyme-inducing agent Aroclor 1254 prior to the extraction of the S9 fraction from the livers.

UNDERSTANDING THE MOLTOX UMU TEST

Salmonella typhimurium TA1535 (hisG46, rfa, uvrB) has been modified to contain the plasmid pSK1002. This plasmid contains the gene umuC fused to a lacZ reporter gene. If genetic lesions are formed when exposed to potentially genotoxic compounds, the umuC gene is induced as part of the bacterial SOS response. Due to the lacZ-umuC fusion and the accompanying lacZ-encoded β -galactosidase activity, genotoxic induction can be detected by the colorimetric change of ONPG substrate (colorless) to 2-nitrophenol (yellow). This protocol was adapted from ISO 13829 "Water Quality- Determination of the genotoxicity of water and waste water using the UMU test".

The MOLTOX® UMU Kit provides components to perform both aqueous and chemical tests based on the user's needs.

31-400 UMU Water, Waste Water, & Chemical Test Kit

Components		
26-714.1 *	TGA Culture Media, 100 mL *	2 ea
26-715 *	10X TGA Culture Media, 10 mL *	1 ea
26-716	B-Buffer, 35ml	1 ea
26-718	Stop Reagent, 30ml	1 ea
22-148L	ONPG, 1.1 mL (4.95 mg)	2 ea
22-149	2-Mercaptoethanol, 100 ul	2 ea
73-1535pSK	S. typhimurium TA1535/pSK1002, 1 ml	2 ea
60-163	4-NQO, 12.5 ug/vial	1 ea
60-164	2-AA, 50 ug/vial	1 ea
22-147	Ampicillin, 55 mg/vial	1 ea
11-401.3L	30 % Mutazyme, reconstitute to 3.25 ml	1 ea

