

Gentoxicity Assay Options

Test	Comments
UMU-CHROMOTEST	Employs Salmonella typhimurium TA 1535 [pSK 1002] whose SOS DNA repair response gene umuC is linked to the β gal gene that produces β -galactosidase. The degree of DNA damage repair using the SOS gene repair pathway is directly linked to the production of β -galactosidase, which is measured by the enzyme's reaction with a blue chromogen. TA 1535 [pSK 1002] contains rfa mutation, which leads to a defective cell membrane, and the uvrB mutation, which eliminates the accurate excision DNA repair mechanism. The results from this assay agrees very closely with the traditional Ames mutagenicity test with the added advantage of only using a single bacterial strain
W S9 Fraction	Coveys Metabolic functionality to traditional UMU-CHROMOTEST which increases the number of compounds that give a positive genotoxic response
UMU-Express P450 1A2	UMU-CHROMOTEST strains of bacteria containing a plasmid which expresses the CYP 450 1A2 enzyme. P450 1A2 bioactivates polyaromatic hydrocarbons (PAHs), aromatic amines and nitro aromatics.
UMU-Express GST T1-1	UMU-CHROMOTEST strains of bacteria containing a plasmid which expresses the human GST T1-1 enzyme. GST T1-1 attaches glutathione conjugate molecules to reactive sites on toxicants. Haloalkanes, organic thiocyanates, nitrosoguanides, vicinal dihaloalkanes, and quinones all produce reactive GST metabolites
SOS-CHROMOTEST	Assays designed for rapid detection of genotoxicity or DNA damage by utilizing the synthesis of the B-galactosidase enzyme, whose gene is linked to an SOS promoter. DNA damage causes induction of the SOS promoter which concurrently transcribes the LacZ gene. The enzyme is produced and assayed using a simple colour change. The degree of colourmetric expression is quantified and given as the SOS-inducing potency (SOSIP). Although the SOS tests line up quite well with the Ames assays they are less sensitive, but report less false-positive results
W S9 Fraction	Coveys Metabolic functionality to traditional SOS-CHROMOTEST which increases the number of compounds that give a positive genotoxic response
SOS-Express P450 1A2	SOS-CHROMOTEST strains of bacteria containing a plasmid which expresses the CYP 450 1A2 enzyme. P450 1A2 bioactivates polyaromatic hydrocarbons (PAHs), aromatic amines and nitro aromatics.
SOS-Express GST T1-1	SOS-CHROMOTEST strains of bacteria containing a plasmid which expresses the human GST T1-1 enzyme. GST T1-1 attaches glutathione conjugate molecules to reactive sites on toxicants. Haloalkanes, organic thiocyanates, nitrosoguanides, vicinal dihaloalkanes, and quinones all produce reactive GST metabolites