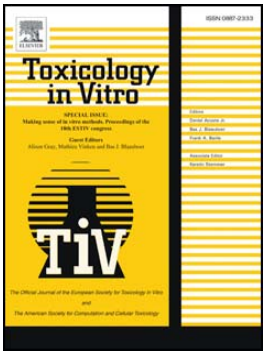

Separating chemotherapy-related developmental neurotoxicity from cytotoxicity in monolayer and neurosphere cultures of human fetal brain cells

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Abstract

Chemotherapy-induced neurotoxicity can reduce the quality of life of patients by affecting their intelligence, senses and mobility. Ten percent of safety-related late-stage clinical failures are due to neurological side effects. Animal models are poor in predicting human neurotoxicity due to interspecies differences and most *in vitro* assays cannot distinguish neurotoxicity from general cytotoxicity for chemotherapeutics.

We developed *in vitro* assays capable of quantifying the paediatric neurotoxic potential for cytotoxic drugs. Mixed cultures of human fetal brain cells were differentiated in monolayers and as 3D-neurospheres in the presence of non-neurotoxic chemotherapeutics (etoposide, teniposide) or neurotoxicants (methylmercury). The cytotoxic potency towards dividing progenitors versus