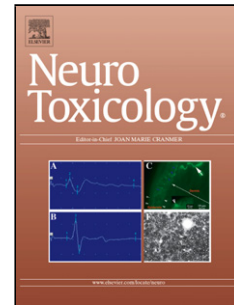


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Neurotoxicity screening of new psychoactive substances (NPS): effects on neuronal activity in rat cortical cultures using microelectrode arrays (MEA)

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Highlights:

- mwMEA recordings allow for efficient integrated screening of NPS effects
- NPS concentration-dependently inhibit neuronal activity (wMFR and wMBR)
- NPS inhibit neuronal activity at concentrations relevant for human exposure
- mwMEA recordings enable investigation of NPS structure-activity relationships
- mwMEA recordings can aid in risk and hazard characterization of NPS

Abstract

While the prevalence and the use of new psychoactive substances (NPS) is steadily increasing, data on pharmacological, toxicological and clinical effects is limited. Considering the large number of NPS available, there is a clear need for efficient *in vitro* screening techniques that capture multiple mechanisms of action. Neuronal cultures grown on multi-well microelectrode arrays (mwMEAs) have previously proven suitable for neurotoxicity screening of chemicals, pharmaceuticals and (illicit)

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