

The term “novel psychoactive substances” refers to newly used designer drugs (“internet drugs”, “research chemicals”, “legal highs”) that may pose a threat to public health comparable to classic previously listed psychotropic substances. Typically, the novel psychoactive substances (NPS) are analogues of controlled substances designed to produce effects similar to the controlled substances they mimic. The availability of new psychoactive substances on Europe’s drug market has rapidly increased over the last decade, as evidenced by growing numbers of seizures reported by the Early Warning System (European Drug Report 2015). A new group of toxic phenylethylamine derivatives named NBOMe of 2C class are frequently bought using the internet and have similar effects to other hallucinogenic drugs. However, they may pose larger risks, due to the limited knowledge about their action, their relatively low price and availability via the internet. This project is aimed to assess the pharmacology of NBOMe drugs (25I-NBOMe and 25B-NBOMe). We are going to characterize the pharmacological profile of NBOMEs action and to determine neurotoxic risk leading to impairment of cognitive functions. Furthermore, hallucinogenic effects in animal models, and possible motor stimulant and anxiolytic effects will be investigated. We hypothesize that NBOMe drugs may alter neuronal circuitry in cortical and limbic regions of the central nervous system, induce neuroplastic changes and cause damage underlying the cognitive and behavioral impairment observed also in schizophrenia and Alzheimer’s Disease. By inducing psychotic symptoms, NBOMes may be a good animal model of schizophrenia. Their effect on neurogenesis may have some potential in treatment of depression and anxiety.