To date, more than 800 molecules have been reported by the European Monitoring Centre for Drugs and drug addiction as New Psychoactive Substances (NPS) with new compounds being introduced continually. These substances mimic the psychotropic effects of classical drugs of abuse, but are not controlled by international drug laws, at least at the moment of their release in the illicit street and web market.

Despite the apparent decrease in the number of compounds newly introduced to the European market starting from 2014-2015, the two years with maximum amount of new NPS, the list of NPS released each year remains considerable.

Differently from classic drugs of abuse, these new psychotropic moieties are scarcely studied from a physicochemical point of view and in their subjective and toxic effects.

Information is mainly bases on naïve news from users in the web fora. Conversely, since these substances represent an increasing alarm for the public health for the related fatalities and intoxication, investigation on the newest compounds is extremely needed.

The objective of this Special Issue is to collect original and review articles to provide the most updated molecular and pharmacological knowledge of the upcoming NPS.

**Keywords:** New Psychoactive Substances, pharmaceutical design, NPS metabolism, pharmacotoxicology

**Subtopics:**
- Physicochemical characteristics of newest NPS,
- Identification of prevailing metabolites of specific last-generation NPSs
- Pharmacotoxicology of most recent NPS in human and animal models

**Schedule:**
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