

## **Adverse Mental Health Effects of a New Psychotropic Substance (Synthetic Cathinones): a Literature Review**

### *Executive summary*

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The use of synthetic cathinone (SC), a substance controlled under the Dangerous Drugs Ordinance (Cap. 134), has spread in recent years and represents a new trend in substance use. The strong risks of SC-related abuse, addiction, and toxicity are matters of concern for policy makers and practitioners in the field of drug addiction.

The objective of this literature review was to identify the risk factors, frequency, symptoms, pathological mechanism, and treatment of synthetic cathinone (SC)-related psychiatric disorders (namely, SC use disorder [SCUD], psychosis, mood disorders, anxiety disorders, and cognitive impairment).

A Medline search was performed in August 2020, using the keywords ‘synthetic cathinones’ and ‘synthetic cathinone use disorder’ or ‘psychosis’ or ‘depression’ or ‘bipolar’ or ‘anxiety disorders’ or ‘cognition’, to identify relevant articles. Articles were limited to those published in the English language between 1946 and 2020. All studies were conducted in humans, and those for which abstracts were unavailable were excluded. In total, 1192 papers were screened, and 34 articles were included in the data synthesis.

Current scientific knowledge strongly supports the contention that SC use can lead to a use disorder (i.e., an addiction). The clinical epidemiological studies reviewed herein indicate that approximately 4 in 10 SC users meet the criteria for a use disorder. Young users are more likely to have SCUD. The mean time from the first use of SC to the onset of SCUD,

the remission rate, and effective psychosocial interventions or pharmacotherapy approved for the treatment of SCUD are unknown.

Retrospective studies have shown that 14% of SC users have psychosis and 35% have psychotic symptoms. However, the risk factors and neurobiology of SC-induced psychosis are unknown. The duration of SC-induced psychosis varies from a few hours to months. Some patients continue to have residual symptoms of psychosis, and psychosis can recur following further SC exposure. SC-induced psychosis is commonly treated with benzodiazepam and atypical antipsychotics. In treatment-resistant cases, electroconvulsive therapy may be required to achieve symptom control.

The prevalence of mania, depressive disorder, anxiety disorder, and cognitive impairment in SC users is unknown. Common manic symptoms in SC users include increased energy, talkativeness, hyperactivity, fast thoughts, euphoria, excitement, and increased sexual drive. Common depressive symptoms in SC users include a lack of motivation, tiredness, reduced appetite, irritability, hopelessness, insomnia, and depressed mood. Common anxiety symptoms in SC users include poor concentration, heart racing, dry mouth, sweating, anxiousness/restlessness, body tenseness, muscle twitches, clenched jaws, tremor, and headache. Common cognitive symptoms in SC users include memory loss and reduced or enhanced concentration. Disorientation, slowed thoughts, and perseverative thinking have also been reported. The results of laboratory experiments have suggested that SC impairs verbal and spatial memory and verbal fluency, but enhances psychomotor performance and speed. However, the risk factors, neurobiology, clinical course, and treatment of bipolar disorder, depression, anxiety, and cognitive impairment in SC users are unknown.

In summary, SC use can be addictive, and it increases the risk of psychosis and other psychiatric disorders. Further clinical research is needed on the prevalence, underlying neurobiological factors, clinical course, and treatment of SCUD and its related comorbidities.