



OP01

Salvia divinorum abuse among teenagers and young adults: an emerging phenomenon in Taiwan

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Objective

Salvia divinorum (SD) has been a craze in western countries within the past two decades. The major active substance of SD, i.e., salvinorin A (SA), is a non-nitrogenous neoclerodane diterpene compound, which acts as a highly selective kappa opioid receptor (KOR) agonist. Besides, SA has an effect on the endogenous opioid system, and somehow leads to changes of serotonin and dopamine concentration in human brain, which then causes psychological dependence and drug craving. Long-term mental disturbance symptoms such as flashback, anxiety, depression, hallucinogen persistent perception disorder (HPPD), and suicidal ideation or even death may also occur following SD abuse. In Taiwan, SD abuse also became popular recently as the Taiwan Poison Control Center (PCC-Taiwan) started to receive four relevant consultations from different emergency departments in 2021.

Case report

Four male teenagers and young adults poisoned by SD were reported to PCC-Taiwan. Their clinical manifestations are described in Table 1. For case 2, we were able to collect his urine sample, which was approximately 2 hours from exposure. The LOD of LC-MS/MS was 2.5 ng/mL for SA and SB. Unfortunately, we did not either detect SA or salvinorin B (SB) in the urine by both LC-QTOF and LC-MS/MS.

The result is not unexpected given the reported pharmacokinetics of SA [1].

Table 1. Patient profile of four cases with *Salvia divinorum* abuse reported to PCC-Taiwan

	Case 1	Case 2	Case 3	Case 4
Age	19 y/o	16 y/o	17 y/o	18 y/o
Gender	Male	Male	Male	Male
Medical history	Major depression	-	-	-
Amount of SD*	unknown	1 gram	0.1- 0.2 gram	unknown



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Route	smoked	vaporized	vaporized	vaporized
Coingestants	--	--	--	alcohol
Signs/symptoms	visual distortion, nausea, vomiting	visual distortion, nausea, tachycardia	dizziness, fever, general weakness, tachycardia	nausea, palpitation, agitation, tachycardia, QT-interval prolongation
Treatment	IV fluid hydration	IV fluid hydration	IV fluid hydration	IV fluid hydration one ampule of IV MgSO ₄
Length of hospital stay	3 hours	5 hours	4 hours	3 hours

*SD denotes *Salvia divinorum*.

Conclusion

This report highlights the non-specific toxic manifestations and the quick-fading characteristics of SD exposure. Moreover, given the unpredictable psychoactive effects of SD on human bodies, many countries worldwide have imposed certain methods to control the abuse of SD and SA. With the above-mentioned cases as well as other teenager and young adult cases reported in the media, the Taiwan government decided to list SD and SA as Schedule 3 controlled drugs on July 4, 2022.