



Correction to: Designer drugs: mechanism of action and adverse effects

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In the original article, the section **Adverse effects of synthetic cannabinoids** was incomplete. The missing text appears below:

users may evoke withdrawal symptoms that can include inner turmoil, drug craving, nightmares, headache, withdrawal seizures, delirium, tremor, profuse sweating, elevations of blood pressure and heart rate, and nausea (Nacca et al. 2013; Sampson et al. 2015; Yazici et al. 2017; Zimmermann et al. 2009). Numerous fatalities have been attributed to synthetic cannabinoid use. These fatalities have been reported to be attributable to direct clinical toxicity (e.g., cardiac dysrhythmias and organ failure) and indirect incidents (e.g., accidents and suicide) (Adamowicz 2016; Adamowicz et al. 2019; Al-Matrouk et al. 2019; Angerer et al. 2017; Armstrong et al. 2019; Behonick et al. 2014; Boland et al. 2019; Darke et al. 2019; Gaunitz et al. 2018; Hasegawa et al. 2015; Ivanov et al. 2019; Johnson et al. 2011; Kovacs et al. 2019; Kraemer et al. 2019; Labay et al. 2016; Law et al. 2015; Maeda et al. 2018; Oluwabusi et al. 2012; Paul et al. 2018; Peglow et al. 2012; Saito et al. 2013; Seither

et al. 2019; Shanks and Behonick 2016; Shanks et al. 2016; Shanks et al. 2012; Shanks et al. 2015b; Tait et al. 2016; Trecki et al. 2015; Tse et al. 2014; Usui et al. 2018; Westin et al. 2016). Based on their relatively short half-lives or novel chemical structures, synthetic cannabinoids may remain undetected by routine drug screening and thus might not be identified as a cause of clinical presentations in some cases.

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