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Letter to the Editor

Semi-Synthetic Cannabinoids Remain a Potent Concern in Ireland

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To the Editor

Cannabis-like drugs known as "semi-synthetic cannabinoids" (SSCs) and other substitutes continue to be sold commercially throughout Ireland despite recent law changes that attempted to prohibit their sale. The continued provision of these substances is suggestive of flaws in Irish drug policy and enforcement that require ongoing attention. To situate the reader and highlight the urgency of the present situation, this Letter outlines the following: (1) the origins of SSCs; (2) the health risks of SSCs; (3) the need for further political and legislative action; and (4) the future of Irish drug policy.

The Origins of Semi-Synthetic Cannabinoids

The sale of SSCs began in the USA in 2019 following implementation of the Agricultural Improvement Act, which legalised cultivation of Hemp containing $\leq 0.3\%$ Δ^9-tetrahydrocannabinol (Δ^9-THC), inadvertently enabling the production of SSCs from Hemp-extracted cannabidiol (CBD). Since then, SSCs have been detected worldwide, arriving in Europe in 2022 and spreading to 27 European nations by 2025 (European Union Drugs Agency, 2025). SSCs include popular compounds like hexahydrocannabinol (HHC) and Δ8-THC, which are commonly sold in vapes and edibles. These compounds are termed "semi-synthetic" because they can be synthesised using phytocannabinoid precursors, with many also present in cannabis. This makes them distinct from fully synthetic cannabinoids, such as Spice or K2, which do not rely on plant-derived precursors for their synthesis and often differ greatly in structure from phytocannabinoids.

The Health Risks of Semi-Synthetic Cannabinoids

Since 2024 there has been a dramatic increase in media coverage throughout Ireland documenting the harms of HHC in particular. These anecdotal reports seem to be supported by wider academic literature pertaining to the potential adverse effects of HHC and other SSCs.

Between 2021 and 2022, 4,925 cases of Δ^8-THC poisoning were reported to US Poison Centres, with 16% of these requiring hospitalisation, and 54% of exposures occurring in children and adolescents (Smith *et al.* 2024). Those under six years old accounted for 58% of the 231 critical care unit admissions and 33% of the 123 major medical outcomes; these exposures occurred via accidental ingestion, which the authors hypothesised as being due to children mistaking Δ^8-THC edible products for popular confectionery, with their lower body masses resulting in a greater dose per kilogram of body weight. Numerous HHC poisonings were also been reported across Europe between 2022 and 2024, with 37 in France, 196 in Czechia, and an outbreak of 30 in Hungary during June 2024 (Čečrle *et al.* 2025; European Union Drugs Agency, 2025; Labadie *et al.* 2024).

Δ^8-THC, HHC, and Δ^9-tetrahydrocannabiphorol (Δ^9-THC-P) have also been implicated in several cases of psychosis (Greer *et al.* 2025; Marzolla *et al.* 2025; Miller *et al.* 2023; O'Mahony *et al.* 2024). Furthermore, 34% of first-episode psychosis patients admitted to University Hospital Galway between May 2023 and December 2024 reported HHC use prior to their admission (O'Mahony *et al.* 2025). Participants in Ireland's edition of the European Web Survey on Drugs also endorsed a variety of psychiatric harms arising from HHC use, including anxiety or panic (15%), dissociation or depersonalisation (12%), and hallucinations or psychosis (4%; Mongan *et al.* 2025). Negative consequences arising from HHC use were also experienced by 90% of past year users.

The Need for Further Political and Legislative Action

In March 2025 the United Nations (UN) Office on Drugs & Crime placed HHC under international control, leading Ireland to ban HHC and other hexahydro derivatives of 3-alkyl homologues of cannabinol in July 2025 under the Misuse of Drugs Act 1977. Indeed, previous research has shown that the lowest incidences of Δ^8-THC poisoning are reported in regions where it is banned, suggesting Ireland's prohibition of HHC and similar compounds may reduce rates of harm associated with these SSCs (Smith *et al.* 2024). However, this legislative approach will likely prove insufficient as the businesses that previously supplied HHC have rapidly updated their product offerings, bringing new ambiguously labelled "HHC alternatives" to market which appear to fall outside of current regulations, e.g., miscellaneous cannabinoid blends and tetrahydrocannabinolic acid. This mirrors the pattern of activity seen in response to early legislative action taken against the new psychoactive substances (NPS) sold in "Head Shops" during the late 2000s (Smyth, 2023). Consequently, new harmful SSCs may appear in future.

The response of these entrepreneurs underscores the need for proactive government monitoring of the cannabinoid market to ensure that novel and harmful cannabis-like drugs are removed rapidly from outlets before reaching the public. This is particularly the case given that both the ease of availability and sense of safety afforded by the commercial sale of HHC may have contributed to its popularity and widespread use throughout Ireland (Mongan

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et al. 2025). However, the capacity to enact such measures in Ireland is unclear, as despite widespread concern and a call from the College of Psychiatrists of Ireland to address HHC in 2024, the government's resulting ban occurred over a year after the majority of European countries had taken action to restrict access (European Union Drugs Agency, 2025, 2024). Consequently, it would appear necessary for a review to be undertaken by the Department of Health to establish why Ireland was so slow to react to the emerging harms of HHC compared to other nations. This examination should also seek to establish why the Criminal Justice (Psychoactive Substances) Act 2010 (CJPSA) – a broad piece of legislation enacted to allow for the rapid addressal of NPS not proscribed under the Misuse of Drugs Act – was not utilised, despite evidence of HHC's psychoactive properties long before it was banned and the CJPSA's past success in addressing many of the challenges posed by NPS (Russo et al. 2023; Smyth, 2023). Any gaps in the CJPSA should be rectified to ensure that Ireland has robust legislation and systems that can be rapidly enacted to protect the public from harmful SSCs and other NPS.

The Future of Irish Drug Policy

The Irish government's slow response to the challenges posed by HHC represents a significant failure which has likely resulted in avoidable harm to many individuals and families. This reactionary approach to drug policy – where substances are regulated only after they are placed under international control and substantial harm has occurred – has led members of the Irish public to become unwitting participants in a natural experiment on the health effects of HHC. Ireland's policymakers must learn from this experience by (1) evaluating existing legislation and enforcement systems and (2) implementing new measures which bolster early warning systems capable of triggering a proactive response to harmful HHC alternatives and future NPS. We call on clinicians, academics, and other experts to lead this action by working with the government to form a set of clear recommendations that, when implemented, ensure an appropriate response to the next wave of commercial substances.

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