

## ► *Letters to the editor*

### Delta-8-THC

The recent C&EN cover article highlighted controversies surrounding a cannabidiol-derived  $\Delta^8$ -tetrahydrocannabinol (delta-8-THC) (Aug. 30, 2021, page 24). Unfortunately, it spoke mostly about concerns and anxieties rather than solutions to the problem and technology opportunities. Besides, the subject hasn't been linked to the accurate history of the core chemistry. Consequently, a cannabidiol-derived delta-8-THC was introduced as merely a popular cannabinoid that results from some obscure chemical transformations that lurk in the underground labs.

However, a facile isomerization of cannabidiol (CBD) to THC, catalyzed by acids and metal salts, had been discovered far earlier than in the 1960s and described in one of the seminal papers, published by the US pioneer of the cannabinoid research Roger Adams (*Journal of the American Chemical Society*, 1940). An interest in CBD-to-THC conversion remained dormant and purely academic for a long time. But it was destined to be reinvigorated, with CBD becoming in the last decade a major commercial cannabinoid. The decades of prohibition and barriers to conduct scientific research led to the current gaps in the existing legislation and also grew urban myths, some of which penetrated into the published piece. One of those concerns the exothermic nature of the catalytic CBD-to-THC conversion.

The implication of olivetol as a common and major degradation product is an example of another unfounded claim. Certificates of analysis are now mandatory and include quantification of delta-8-THC and delta-9-THC, along with other cannabinoids and contaminants.

We could not agree more that a full analysis of delta-8-THC-associated degradation products and the establishment of their safety are crucial. But this clarity is not far off. The general fundamentals of catalytic isomerization and cyclization processes are covered in chemistry textbooks. The scientific and business communities need only devote reasonable resources to address the information gap amplified in the article. It is no secret that cannabis business interests, not academic researchers, have continued to drive research into delta-8-THC's safety.

As THC explorations expand, cutting-edge cannabis companies will adopt emerging conversion methodologies, without toxic solvents and purification processes in place, to produce safe, fully characterized delta-8-THC and delta-9-THC from hemp-derived CBD. The economic and safety advantages inherent in these emerging technologies ensure their substitution for the current solution chemistry-based approaches, the shortcomings of which are presented as intractable and disqualifying. We hope coverage of this fundamental innovation, affecting what will eventually be a \$200 billion global market, is worthy of a C&EN cover sooner rather than later.

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