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# Fool's gold: diseased marijuana and cannabis hyperemesis syndrome

Oscar Armando Dorantes

San Diego State University,  
San Diego, California, USA

## Correspondence to

Oscar Armando Dorantes,  
San Diego State University,  
San Diego CA 92182, USA;  
armydog24@hotmail.com

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Dear Editor,

I am writing in response to the article by Gajendran *et al*<sup>1</sup> and the editorial by Ron Shay, 'Cannabis hyperemesis syndrome: the conundrum is here to stay'.<sup>2</sup> As an emic cultural investigator (anthropologist) and from my vantage point, the problem of cannabis hyperemesis syndrome could easily go away just as quickly as it has appeared. There is a large disconnect between the professional medical community and the marijuana subculture. The majority of the latter are somewhat in denial that cannabis is the cause of this condition and, on the flip side, doctors feel strongly about their conclusions. Perhaps both can be right, because in the marijuana subculture community there are two types of marijuana: 'the sticky, skunky weed' or the 'the bunk weed', 'the dank or the regs' or otherwise viewed as the 'good stuff versus not good stuff'. Were any of the samples of consumed marijuana analyzed during the marijuana hyperemesis diagnosis, as presented in Gajendran *et al*'s paper? Examining the marijuana consumed may help to understand the source of the problem causing cannabis hyperemesis syndrome. It is typically understood that under normal circumstances, marijuana should not induce such severe adverse reactions (nausea, abdominal pain, vomiting, etc) as those described in cannabis hyperemesis syndrome. Marijuana crops need to be regularly tested for plant pathogens, similar to food and agricultural



**Figure 2** Healthy trichome growth on marijuana plant.

crops, because marijuana showing symptoms of the plant pathogen, hop latent viroid, can cause painful sickness in very small amounts, regardless of whether it is inhaled or ingested.

Crop disease in marijuana has gone unchecked for many years and the prevalence of these bad crops is rapidly becoming the norm.<sup>3</sup> As early as 2004, I observed symptoms of hop latent viroid in California's marijuana market, coincidentally around the same time as the first reports of cannabis hyperemesis syndrome were documented. Observable symptoms of this plant pathogen include, but are not limited to, brittle lateral branch growth (*figure 1*), sudden wilting, non-sticky small buds, and a lack of aroma. Evidence of its infection in marijuana crops across the USA and Canada are being reported at an exceeding rate.<sup>4</sup> The most concentrated form of the psychoactive active component, tetrahydrocannabinol (THC), is within the white sticky resin that the marijuana plant produces, known as trichomes (*figure 2*).<sup>5</sup> This resin also acts as a barrier to protect it from disease, insects, and other debris.<sup>6</sup> In the worst case scenario, hop latent viroid prevents this sticky resin from fully developing on the plant, resulting in small buds appearing like plain leafy material. In the best case scenario, all is well until about the last 4 weeks of bud flowering when healthy normal trichomes rapidly start to become wilted in appearance or rapidly degrade before its normal harvest time, thus originally called 'dudding disease' before any pathogen was scientifically identified as its cause.<sup>7</sup> One could theorize that any nutrients, pesticides, or fungicides sprayed on the foliage by the grower



**Figure 1** Abnormal lateral lower branch growth on marijuana plant.

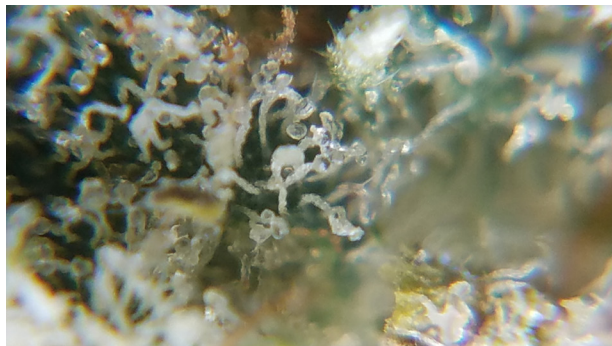


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- ▶ <http://dx.doi.org/10.1136/jim-2021-001982>
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**Figure 3** Abnormal trichome growth on marijuana plant.

becomes absorbed in greater concentrations because this important THC rich resinous barrier is not present, likely directly affecting potency and purity.

Users have become aware that there is something wrong with most of the marijuana available because there are 'no crystals' (a layman's term loosely used for trichomes). This could help explain why vaping concentrated cannabis is on the rise as an alternative. Some growers even mitigate the apparent dudding out of marijuana buds and flowers by adding flavor additives. Examining marijuana crops for symptoms of this plant pathogen can be done using a 60× jeweler's loupe. Trichomes do not appear upright and are missing their robust cloudy white heads (figure 3).

Hop latent viroid in marijuana may be the culprit for cannabis hyperemesis syndrome. The new marijuana industry has failed to detect and eradicate this plant disease and is turning a blind eye at the expense of the public's health. This type of plant pathogen is common in the agricultural industry. It is part of the Carlavirus family of viruses, and detection kits are already available for farmers that grow our food crops.<sup>8</sup> With marijuana becoming legal in the majority of US states, consumers need to be protected from plant diseases that produce abnormal marijuana crops. Marijuana should not be sold like gold in a jewelry store but

rather treated like our food and agriculture crops so that they are free of plant diseases to protect the public.

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#### ORCID iD

Oscar Armando Dorantes <http://orcid.org/0000-0002-1925-5236>

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