



## Cannabis Attitudes, Allergies & Patterns of Use in Followers of AAN

April 1, 2021

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### OUR SPEAKERS



**Joanna Zeiger, MS, PhD**

- Founder & CEO, Canna Research Group
- Olympian & Former World Champion in Triathlon
- Asthmatic



**William Silvers, MD**

- Clinical Professor at University Colorado Health Sciences School of Medicine
- Faculty Affiliate, CU Center for Bioethics & Humanities

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## Program Outline

1. History of Cannabis use in the US
2. Cannabis attitudes and patterns of use among members of the Allergy & Asthma Network (AAN)
3. Cannabis and allergies

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## History of Cannabis Use in the US

Dr. William Silvers

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## History of Cannabis Use in US

- Cannabis use dates back to the Colonial Era
- American production of hemp (the cannabis plant) was encouraged by the government in the 17th Century for the production of rope, sails, and clothing.
- Domestic production of hemp flourished until after the Civil War, when imports replaced hemp.

Survey of Marijuana Law in the United States: History of Marijuana Regulation in the United States  
<https://libguides.law.uga.edu/c.php?g=522835&p=3575350#:~:text=In%20the%20late%2019th%20Century,the%20recreational%20use%20of%20marijuana.&text=By%201931%2C%2029%20states%20had%20outlawed%20marijuana.>

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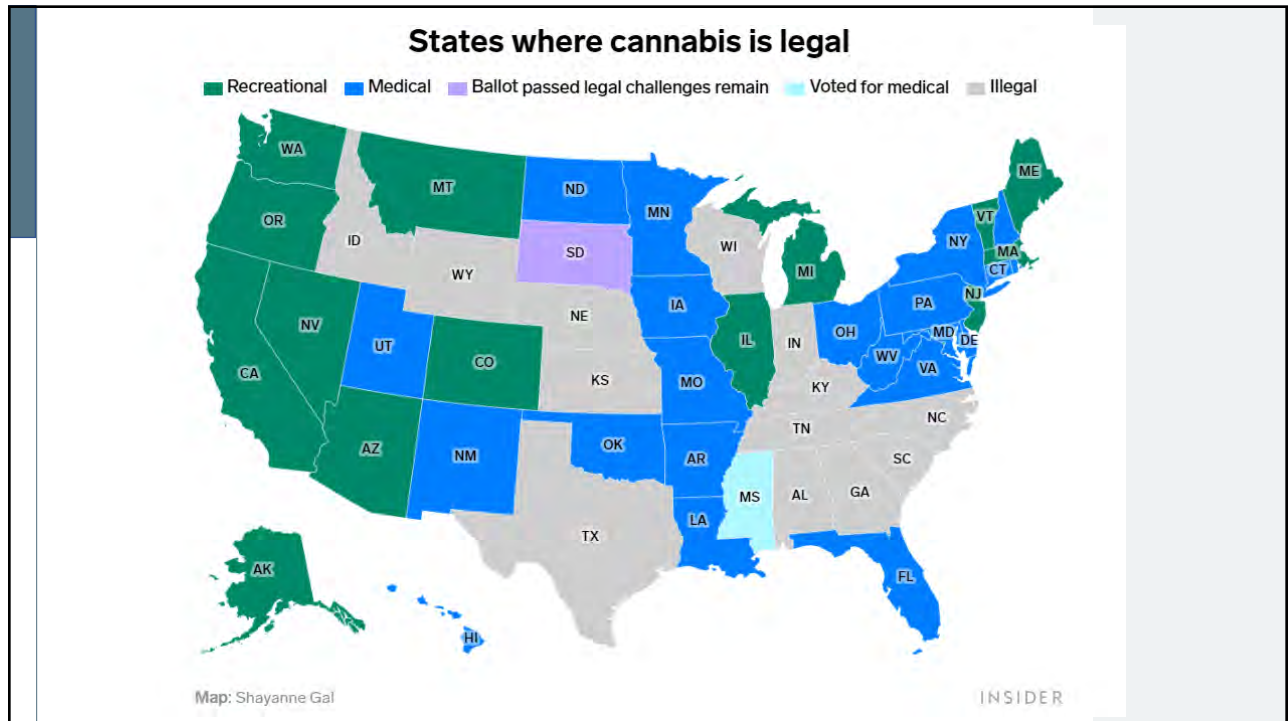


## History of Cannabis Use in US


- In the late 19th Century, marijuana became a popular ingredient in many medicinal products and was sold openly in pharmacies.
- Marihuana Tax Act of 1937 was the first national regulation of cannabis.
- Cannabis was officially outlawed for any use (medical included) with the passage of the 1970 Controlled Substances Act (CSA).
- Cannabis is a schedule 1 substance federally, but legal in some form in 36 states.

Survey of Marijuana Law in the United States: History of Marijuana Regulation in the United States  
<https://libguides.law.uga.edu/c.php?g=522835&p=3575350#:~:text=In%20the%20late%2019th%20Century,the%20recreational%20use%20of%20marijuana.&text=By%201931%2C%2029%20states%20had%20outlawed%20marijuana.>

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## Cannabis attitudes and patterns of use among members of the Allergy & Asthma Network (AAN)

Joanna Zeiger, PhD

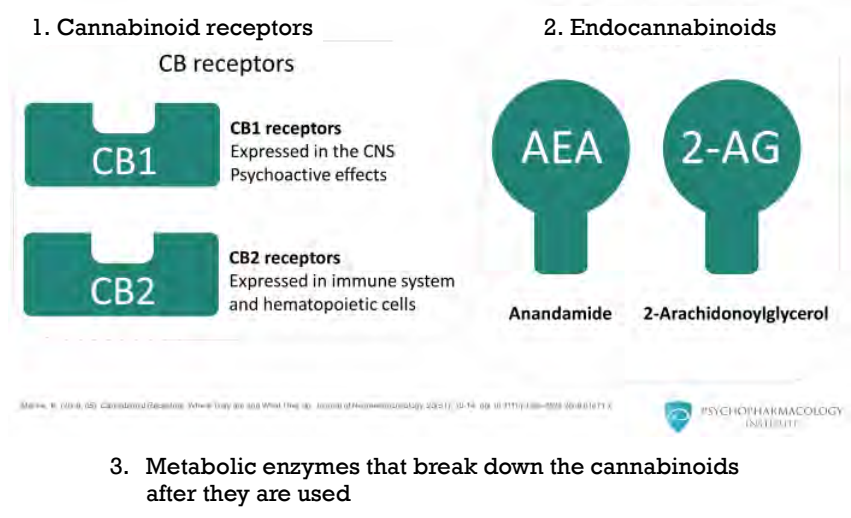
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# Cannabis background



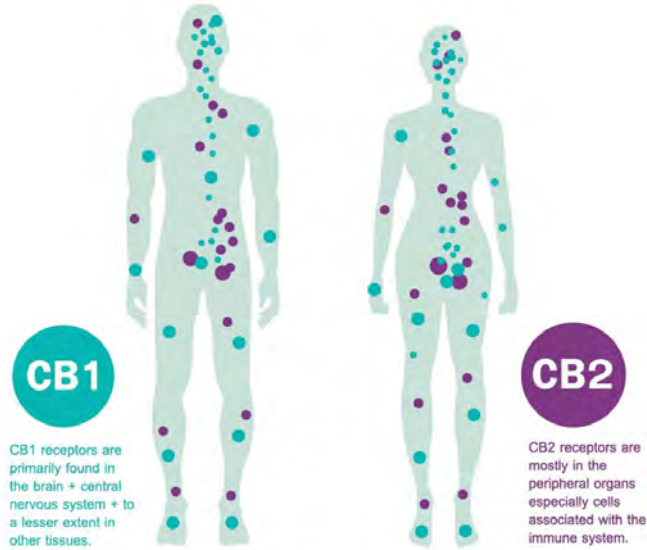
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# The Endocannabinoid System



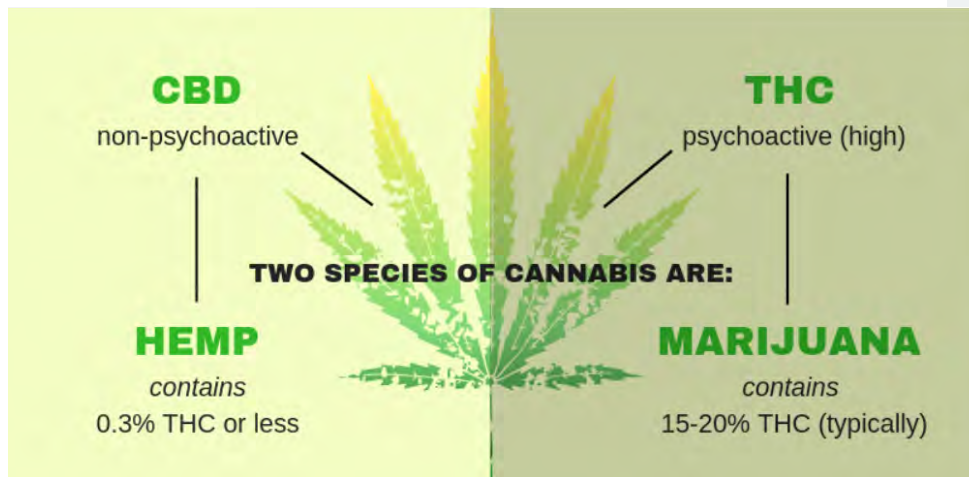
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## The Endocannabinoid System



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## Cannabis Nomenclature



CBD PRODUCTS CAN COME FROM HEMP OR FROM MARIJUANA

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## Cannabis Background: Benefits

Helpful to cancer patients

AIDS/HIV patients

Helps with severe pain

Helps with seizure disorders

Can improve sleep, increase calm, decrease anxiety

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## Cannabis Background: Adverse effects

Hyperemesis syndrome (vomiting)

Cannabis induced psychosis


Increased appetite

Decreased concentration


Anxiety

Respiratory & Cardiovascular complications

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Contents lists available at [ScienceDirect](#)



## Cannabis attitudes and patterns of use among followers of the Allergy & Asthma Network

Joanna S. Zeiger, MS, PhD<sup>1</sup>; William S. Silvers, MD<sup>2,3</sup>; Tonya A. Winders, MBA<sup>4</sup>; Mary K. Hart, RRT<sup>4</sup>; Robert S. Zeiger, MD, PhD<sup>3</sup>

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<sup>2</sup> *Department of Medicine, University of Colorado School of Medicine, Denver, Colorado*  
<sup>3</sup> *Allergy & Asthma Network, Vienna, Virginia*  
<sup>4</sup> *Department of Allergy, Kaiser Permanente Southern California, San Diego, California*

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## AAN Study Background I

- In the US, cannabis use is increasing in the general population and various disease populations due to legalization and perceived benefit to combat symptoms of pain, insomnia, and anxiety.
- Cannabis use is poorly studied in allergic/asthmatic patients a group whom route of administration could have broad adverse effects.
- Smoking and vaping cannabis in this population could lead to increased symptoms of cough and wheeze, as well as increased use of asthma medications and exacerbations.
- However, short-term use of cannabis can act as a bronchodilator or cause coughing or wheezing, whereas long-term use could cause increased respiratory symptoms.

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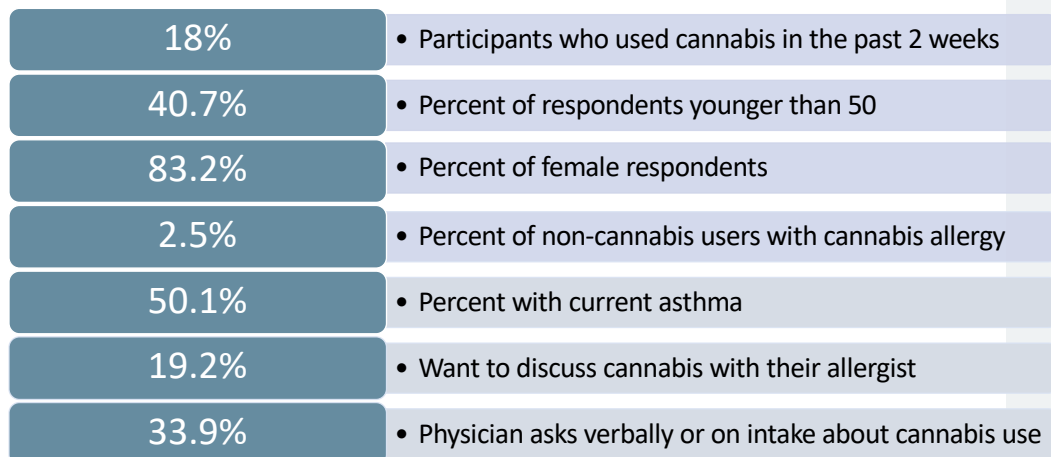


## AAN Study Background II

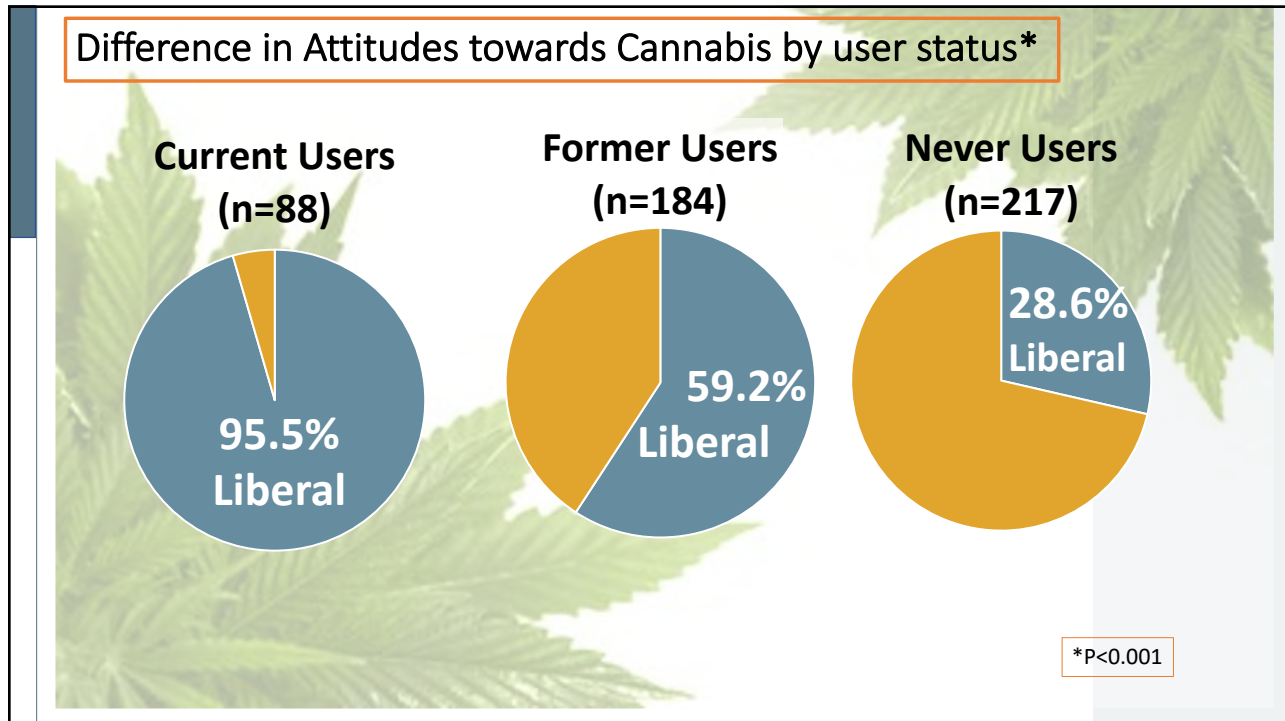
- Recruitment was through the AAN via newsletter, social media, webinars.
- Survey was anonymous and was open from May 7, 2020 through September 7, 2020.
- Measured asthma control, asthma quality of life, allergic disease.
- Cannabis questions covered duration and frequency of use, knowledge and attitudes, benefits and adverse effects, routes of administration.
- 489 respondents completed the survey.

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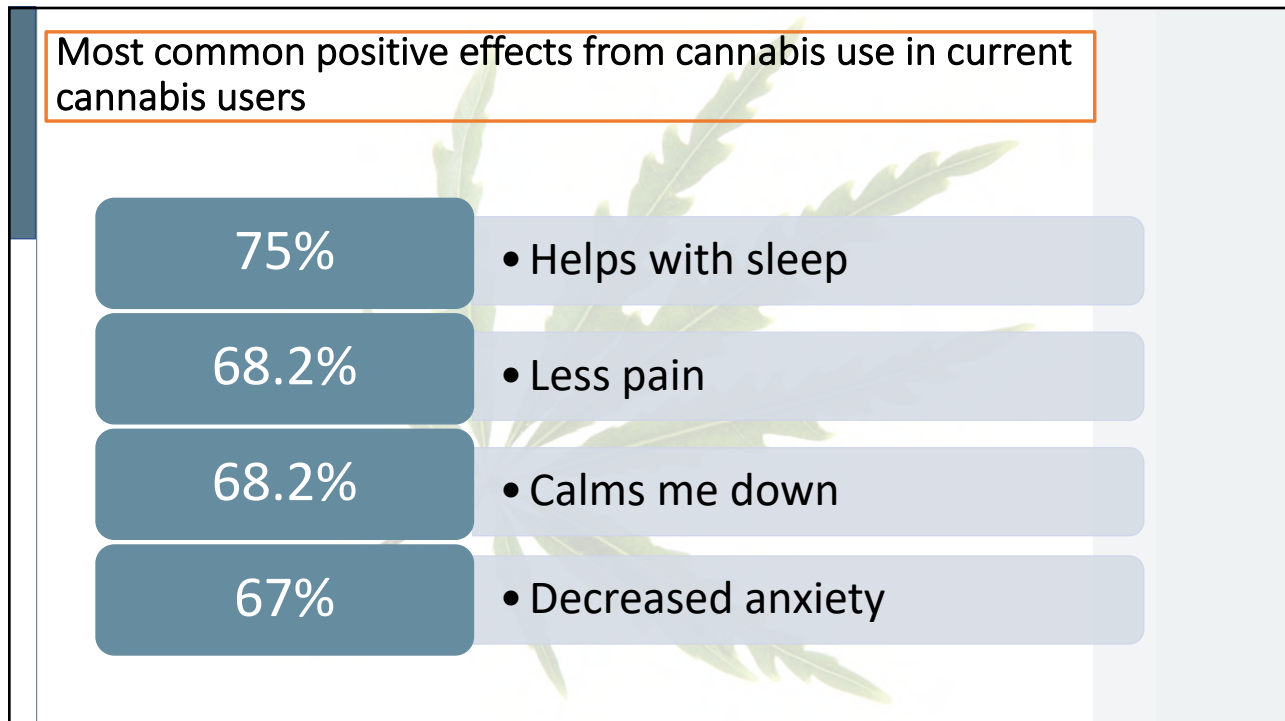
## Results of Survey of Allergy & Asthma Network Members (n=489)



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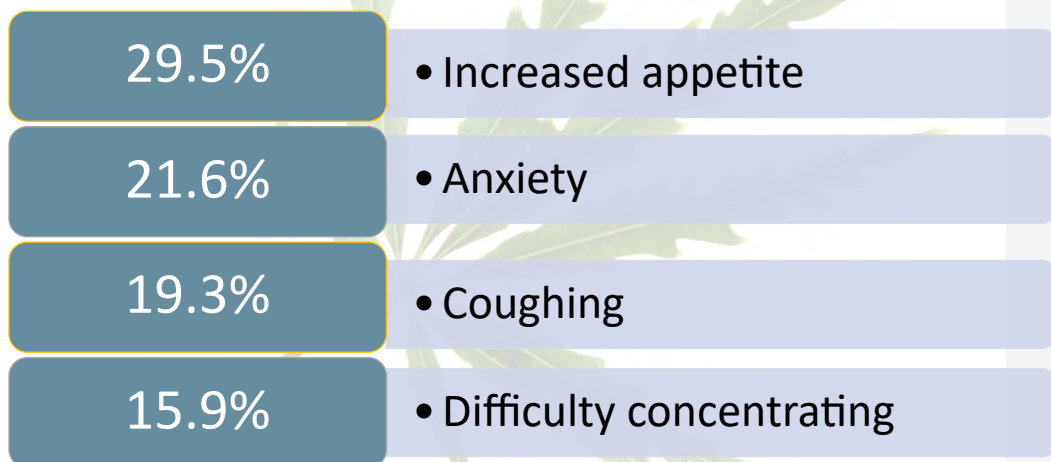


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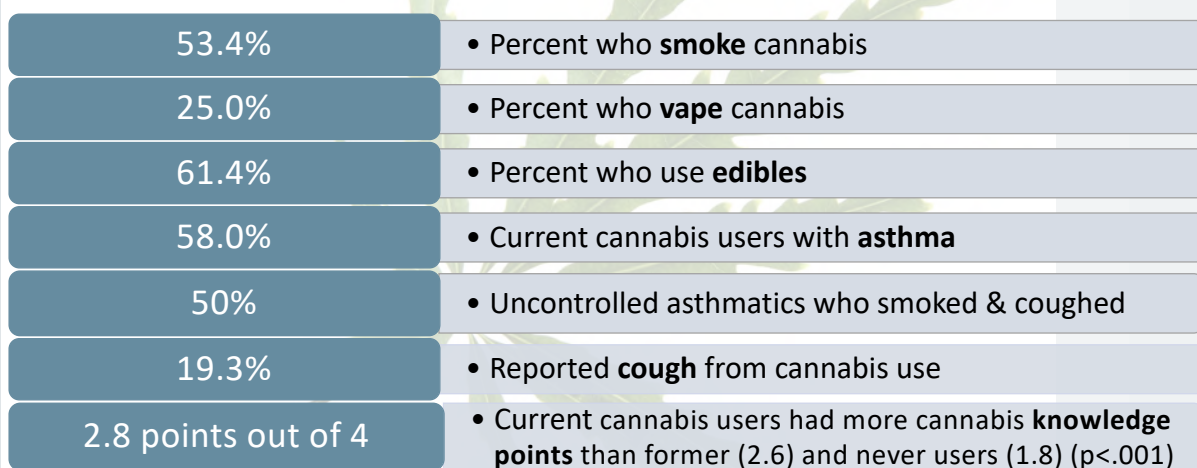
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### Most common adverse effects from cannabis use in current cannabis users




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### Results from current cannabis users



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## Survey Conclusions

- A minority of AAN respondents currently use cannabis.
- Half of current cannabis users with uncontrolled asthma reported smoking cannabis.
- A minority of allergists inquire about cannabis use.
- A minority of patients want to discuss cannabis with their allergist.
- Positive effects were more common than adverse effects.

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## Cannabis & Allergies

Dr. William Silvers

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## Marijuana Use and Respiratory Effects

### Systematic Literature Review

Retail Marijuana Public Health Advisory Committee  
Final Approval: January 12, 2015

Primary Authors:  
Todd Carlson, MD, Internal Medicine Resident, University of Colorado.

Mike Van Dyke, PhD, CIH, Chief, Environmental Epidemiology, Occupational Health and Toxicology Branch, Colorado Department of Public Health and Environment.

**Table 1:**  
Findings Summary: Marijuana Use and Respiratory Effects

Substantial	Moderate	Limited	Insufficient	Mixed
Same carcinogens in marijuana smoke as tobacco smoke	Heavy use increases airflow obstruction	Increased particulate matter deposits compared to tobacco	Emphysema	COPD
Chronic bronchitis with cough/wheeze/sputum		Bullous lung disease	Respiratory infections	Lung cancer
Pre-malignant lesions in airways		Smoke from water pipes or bongs contain more cancer-causing chemicals		Respiratory health effects from vaporizing
Acute use improves airflow				

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## A Colorado allergist's experience with marijuana legalization

[William S. Silvers, MD](#)  
Allergy Asthma Colorado PC, Englewood, Colorado

DOI: <http://dx.doi.org/10.1016/j.anai.2015.11.014> | CrossMark

Although I appreciated the fine review by Ocampo and Rans entitled Cannabis Sativa: The Unconventional "Weed" Allergen,<sup>1</sup> I thought it would be worthwhile to describe the few adverse reactions seen in our patient population. The relative paucity of these presentations since legalization of marijuana in Colorado suggests that cannabis sativa is a mild allergen, with significant exposure required to elicit respiratory and dermatologic allergic reactions.

With the advent of marijuana legalization in Colorado, we describe 3 recent patients with distinct clinical presentations suggestive of marijuana sensitization. The results of skin testing by the "puddle" technique were positive in 2 of these patients but negative in the other. These cases indicate the need for clinicians to query their patients about marijuana exposure and, when appropriate, perform specific testing to establish sensitization. Further investigation to elucidate the specific sensitizing antigen(s) in marijuana or its derivatives (eg, wax, oils) is required to better understand the pathobiology of this environmental exposure.

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## Spectrum and prevalence of reactions to marijuana in a Colorado allergy practice

William S. Silvers, MD , Tiana Bernard, BA  
Greenwood Village, Colorado

DOI: <http://dx.doi.org/10.1016/j.anal.2017.10.028> | CrossMark

Abstract **Full Text** References

Since the legalization of medical marijuana (MJ) and recreational MJ in certain states, an increasing number of patients with allergy are presenting from MJ exposure. Most have substantial exposure from industrial cultivation or are heavy consumers, indicating that cannabis is a mild allergen.

A voluntary questionnaire addressing our patients' exposures to MJ, active or passive, and types of reactions was administered.

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### Association of regular marijuana use alone with chronic respiratory symptoms compared to nonsmokers of any substance

Author	↑ cough	↑ sputum	↑ wheeze	↑ breathlessness
Bloom et al. (1987)	numeric ↑	+	+	ns
Tashkin et al. (1987)	+	+	+	ns
Taylor et al. (2000)	numeric ↑	numeric ↑	numeric ↑	numeric ↑
Moore et al. (2004)	+	+	+	ns
Aldington et al. (2007)	+	+	+	NR
Tan et al. (2009)	No significant ↑ in symptoms consistent with COPD			

+ = significant increase compared with nonsmokers of any substance;  
ns = not significant; NR = not reported

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## Habitual marijuana smoking is not associated with COPD

Author	FEV <sub>1</sub>	FVC	FEV <sub>1</sub> /FVC	TLC	FRC	RV	SG <sub>aw</sub>	D <sub>L</sub> CO
Tashkin et al. (1980)	ns	ns	NR	ns	ns	NR	↓	ns
Bloom et al. (1987)	ns	NR	↓	NR	NR	NR	NR	NR
Tashkin et al. (1987)	ns	ns	ns	ns	ns	ns	↓	ns
Sherrill et al. (1991)	↓*	ns	↓*	NR	NR	NR	NR	NR
Taylor et al. (2000)	NR	NR	↓	NR	NR	NR	NR	NR
Moore et al. (2004)	NR	NR	ns	NR	NR	NR	NR	NR
Aldington et al. (2007)	ns	NR	ns	ns	ns	ns	↓	ns
Hancox et al. (2010)	ns	trend to ↑	ns	↑	↑	↑	↓	ns
Tan et al. (2009)	NR	NR	ns	NR	NR	NR	NR	NR
Pletcher et al. (2012) CARDIA	ns	↑	↑	NR	NR	NR	NR	NR
Kempker et al. (2015) NHANES	ns	↑	↓ <sup>†</sup>	NR	NR	NR	NR	NR

ns = not significant  
 NR = not reported  
 ↓ = significantly decreased  
 ↑ = significantly increased  
 \*p<0.05 with previous but not current MJ use (6 yr follow=up)  
 †p=0.02 with >20 jt-yrs of MJ use (NHANES 2009-10)

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## Marijuana Smoking is not associated with macroscopic emphysema

	MS (N=75)	MTS (N=91)	TS (N=92)	NS (N=81)
Mean RA950 apical, %	10.8*	10.6*	8.3	8.6
Mean RA950, 3 slices, %	12.3*	10.8	9.6	10.5
Macroscopic emphysema, N (%)	1 (1.3)	15 (16.5)	17 (18.5)	0 (0)

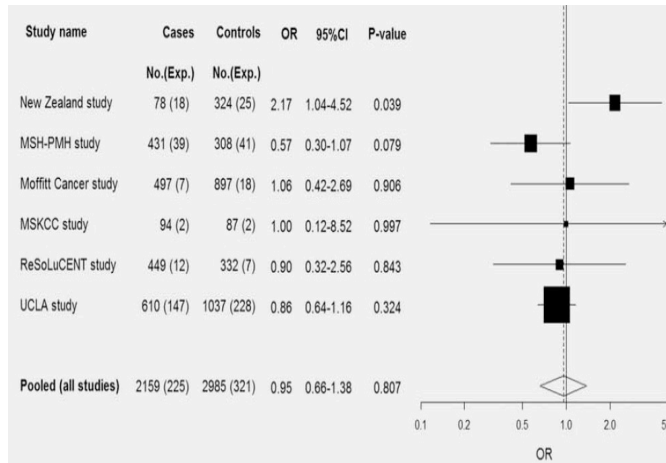
\*Significantly different from NS, p<0.05

Aldington S, Williams M, Nowitz M, et al. Effects of cannabis on pulmonary structure, function and symptoms. *Thorax*. 2007;62(12):1058-1063.

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**Despite abnormal histology, case-control studies suggest no association between habitual marijuana smoking and lung cancer**



Zhang LR, Morgenstern H, Greenland S, Chang SC, Lazarus P, Teare MD, et al. Cannabis smoking and lung cancer risk: pooled analysis in the International Lung Cancer Consortium. *Int J Cancer*. 2015;136(4):894-903.

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**Allergens identified in *C. sativa* in leaves, buds, flowers**

10-kDa Can s 3	a ns-LTP (PR-14), in peach, etc
38-kDa	a (PR-5), in grapes, etc
14-kDa	a Profilin (pan-allergen) as Bet v2
23-kDa oxygen-evolving...protein	Protein for photosynthesis
50-kDa RuBisCo	Rate limiting for photosynthesis
CCD Cross-react. Carbohydrate D	May cross-react with IgE

All allergens reported by: Nayak AP et al. *Ann Allergy Asthma Immunol* 2013; 111:32-37  
 Except, 10 kDa (nsLTP): Larramendi CH et al. *Int Arch Allergy Immunol* 2013;162:115-122

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## Cannabis-Fruit-Vegetable Cross-over compared to Pollen-Food Cross-over (OAS)

Sensitizer nsLTP Lipid Transfer protein More severe reactions	Sensitizer Bet v 2 Pan-Allergen Usually mild reactions
Pru p 3 Peach	Pru p 4 Peach
Ara h 9 Peanut	Aara h 5 Peanut
Mal d 3 Apple	Mal d 4 Apple

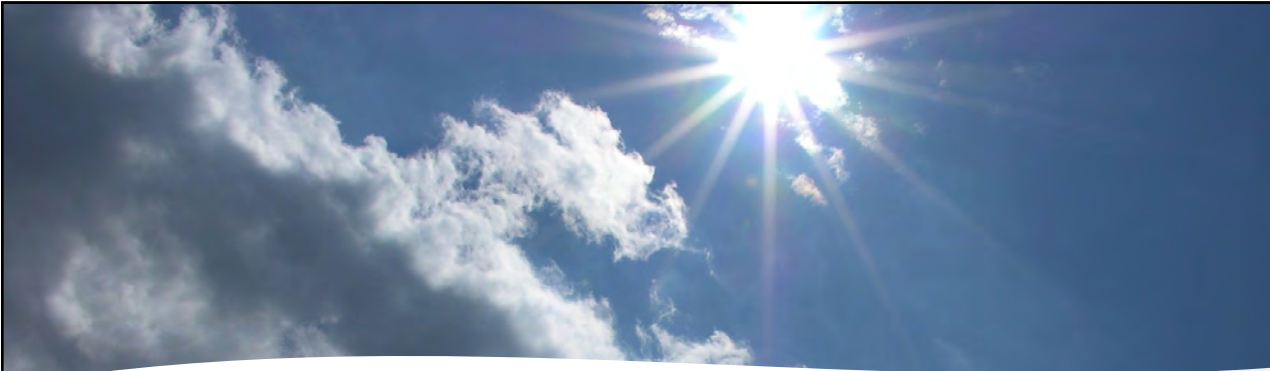
Van Gasse AL et al. *Clin Chim Acta* 2015;444:54-61  
Santos A et al. *Int Arch Allergy* 2011;155:191-201

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## TIME FOR QUESTIONS





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**Next Webinar:**

**The Summer Allergy & Asthma Season Outlook**

- Tuesday, April 6, 2021 – 3:00 PM ET
- Speaker: Bill Kirk, CEO – WeatherTrends 360
- Register at: [allergyasthmanetwork.org](https://allergyasthmanetwork.org)  News  Webinars

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