

## What's really in the weed you're smoking?

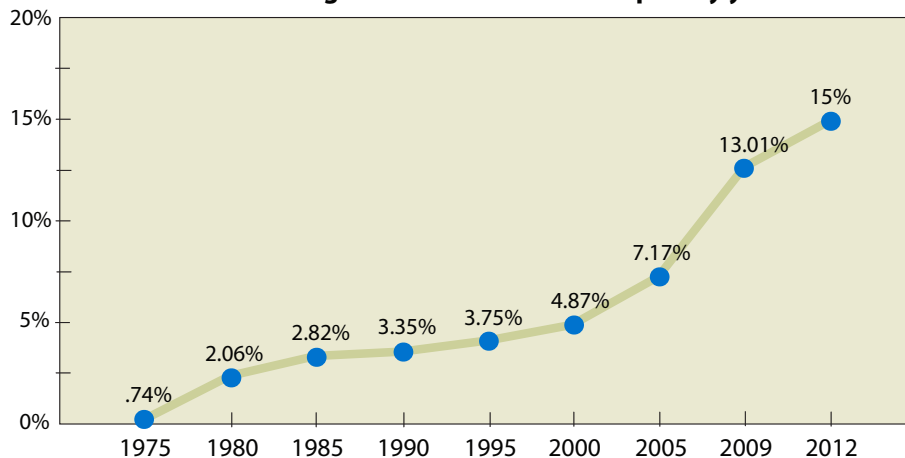
### Marijuana's chemical makeup

- Contains more than 460 active chemicals — and over 70 known cannabinoids! Eight produce the most effect (THC, THC-V, THC-A, CBD, CBD-A, CBD-V, CBN, CBG, CBC).
- Delta-9-Tetrahydrocannabinol (Delta-9-THC) is the primary and most familiar psychoactive compound. Research shows that THC interacts with the brain similar to the endogenous cannabinoid neurotransmitter anandamide, which is involved in the neurological processes of memory and pleasure seeking.<sup>1</sup>

### Cannabinoid potency

- Potency is a result of many variables — plant genetics and strain, cultivation method, harvesting, and processing.
- The cannabinoid potency profile is the concentration of cannabinoids expressed in percentage of weight per weight (% wt/wt). This is the weight of the cannabinoid divided by the total plant weight. Edibles, tinctures, and topical are displayed in milligrams of cannabinoids per sample serving size (mg/serving).
- Marijuana users in the 1970s were most likely to smoke the leaves and initiate use around 20 years of age. Marijuana users today, however, start in their mid-teens and prefer to smoke the more potent flowering tops (buds) of the plant.
- **Marijuana plant flower:** 8%–25% THC-A
- **Edibles (brownies, candies, chocolate):** .05 mg to 105 mg cannabinoids per serving
- **Cannabis concentrates (hash oils, tinctures, waxes, etc.):** often exceed 70% THC
- **Vaporizers with cartridges (much like e-cigarettes):** 15–30% THC
- **Synthetic marijuana (K2, fake weed, Yucatan Fire, Skunk, Moon Rocks):** contains dried, shredded plant material and chemical additives that are responsible for their psychoactive (mind-altering) effects and their potential toxicity

Delta-9-THC averages of illicit cannabis samples by year seized<sup>1,2</sup>



## Effects of marijuana increase with potency

- Marijuana is stronger today than in the past. For a new user, this may mean exposure to higher concentrations of THC, with a greater chance of an adverse or unpredictable reaction.
- Using marijuana can lead to altered perceptions and mood, impaired coordination, difficulty with thinking and problem solving, and disrupted learning and memory.
- At higher levels of THC (70% plus), negative effects include psychosis, irritability and paranoia.
- Marijuana also raises heart rate by 20–100 % shortly after smoking, which lasts for hours.
- Smoking is an irritant to the lungs and can cause respiratory problems and diminished pulmonary functioning, including bronchitis, coughing, phlegm, and lung infection.

## Oral & inhaled medicine

Areas of therapeutic potential include:

- Analgesia in chronic neuropathic pain
- Appetite stimulation in debilitating diseases (e.g., cancer & AIDS)
- Spasticity in multiple sclerosis

## Does smoking marijuana as a teen really matter?

- One in 6 teenagers who try marijuana become addicted, which results in withdrawal symptoms — including irritability, sleeplessness, decreased appetite, anxiety, and drug craving.<sup>2</sup>
- Individuals who used cannabis before the age of 17 were 60% less likely to graduate high school and college, lost an average of 8 IQ points, used illicit drugs more frequently, and were more likely to attempt suicide than their non-using peers over the next two decades.<sup>3</sup>

## What do studies show about casual use?<sup>4</sup>

- THC can **disrupt focus, working memory, decision-making and motivation** for 24 hours after use.
- Even young adults who smoked 1–2 times weekly showed structural brain differences.
- Many dangerous pesticides, fungicides, and Plant Growth Regulators (PGR's) are used on Cannabis, often indiscriminately throughout the flowering stages of growth. These residual toxins create potential safety issues to individuals when consumed.

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### References:

<sup>1</sup> NIDA Drug Facts 2014. Retrieved from <http://www.drugabuse.gov/publications/drugfacts/marijuana>.

<sup>2</sup> Zlatko Mehmedic, Suman Chandra, Desmond Slade, Heather Denham, Susan Foster, Amit S. Patel, Samir A. Ross, Ikhlas A. Khan, and Mahmoud A. ElSohly. "Potency Trends of D9-THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008," *Journal of Forensic Sciences*, Vol. 55, No. 5, September 2010. Available online at [interscience.wiley.com](http://interscience.wiley.com)

<sup>3</sup> Edmund Silins, L. John Horwood, George C. Patton, David M. Fergusson, Craig A. Olsson, Delyse M. Hutchinson, Elizabeth Spry, John W. Toumbourou, Louisa Degenhardt, Wendy Swift, Carolyn Coffey, Robert J. Tait, Primrose Letcher, Jan Copeland, Richard P. Mattick. "Young adult sequelae of adolescent cannabis use: an integrative analysis," *The Lancet Psychiatry*, Volume 1, Issue 4, September 2014, 286–293.

<sup>4</sup> Abigail Sullivan Moore, "This is Your Brain on Drugs," *The New York Times*, October 29, 2014. Retrieved from <http://www.nytimes.com>