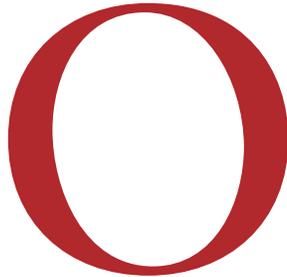


U.S. Sentencing Commission Testimony on Synthetic Cathinones, Cannabinoids, and Opioids

By Darryl S. Inaba, PharmD, CATC-V, CADC III



In September 26, 2017, Dr. Darryl Inaba, PharmD, CATC-V, CADC III, was invited by the U.S. Sentencing Commission to give testimony on synthetic cathinones, cannabinoids, and opioids in this capacity as an expert in the field and as a NAADAC member. Here is his testimony.

Thank you for this opportunity to share my clinical interactions and concerns regarding the continuous growth in the trafficking and abuse of illicit “designer drugs,” internationally known as “new psychoactive substances.”

I am Dr. Darryl Inaba, Director of Clinical and Behavioral Health Services at the Addictions Recovery Center and Director of Education and Research at CNS Productions, Inc. both in Medford, OR. I am a Lifetime Fellow of the Haight-Ashbury Free Clinics where I served as the Director of its Drug Detoxification and After Care Services from the late 1960s through 2006. I am also speaking today as a member of NAADAC, the Association for Addiction Professionals.

During the 1960s and 1970s I witnessed what some have described as the largest uncontrolled human drug experiment in the world that had its epicenter in the United States. Synthetic drugs like PCP, 2-CB, LSD and many others were unleashed on our streets with very little to no preliminary research on their toxic or addictive effects. This had devastating consequences for many who were exposed to these substances. These people were in fact, unknowingly human “guinea pigs” for rogue street chemists and illicit drug traffickers to determine the effects and dosage range for the substances that were trafficked. Now I believe America is in a much more serious situation with bigger operations releasing a deluge of synthetic cathinones, cannabinoids and opioids into our communities again. The traffickers use those who experiment with these new psychoactive substances as test subjects to determine dosing parameters and toxic or side effects of such illicit drugs to sell on the internet as well as in head shops or street drug outlets.

Cathinones: “Bath Salts,” “Psychoactive Bath Salts,” “Psycho-Stimulants”

By the latter part of the last decade, chemical modifications of cathinone, the active chemical in the *Catha edulis* bush chewed as Khat, Qat, Miraa, et al. in East Africa and the Arabian Peninsula, begin to appear throughout the United States. Modifications were needed to traffic this drug because it quickly degraded once the leaves of the plant were removed from the bush. Chemically redesigning cathinone as mephedrone, methylone, MDPV, et al. resulted in a more stable compound and provided increased potency and effects (as well as toxic effects) than what resulted from taking cathinone itself.

First sold as “bath salts — Not For Human Consumption” these cathinone analogues resulted in toxic and addictive effects but they continued to

be sought because they were available (especially on the internet), produced powerful often times overwhelming effects resulting in a “zombie-like” affect in the user and were non-detectable in standard urine drug test or other body fluid testing until the specific molecule is identified and an appropriate standard anolyte is developed for it to be tested. These and other new synthetic substances are marketed as household or other non-drug products to avoid FDA, DEA and other legal scrutiny. Thus, these and other new psychoactive drugs can circumvent legal and clinical interaction processes when they first appear in the substance abusing subculture. Note that since “bath salts” became an easily recognized ploy in the trafficking of “psychoactive bath salts” for abuse purposes, traffickers quickly moved on to market them differently as jewelry or glass cleaner, plant food, energy powder, insect repellent, stain remover, ladybug attractant, et al. most with the strong admonition of “Not For Human Consumption” on their package. Although 10 or so different synthetic cathinone molecules are now banned in the U.S., several more continue to replace those and are available to be sold until they are identified and separately legislated against which will only result in other newer designer cathinone-like drugs replacing them. This is dangerous as even slight chemical modifications in the parent molecule can result in massive changes in the potency and toxic effects of each specific molecule. For example, MDPV, methylene dioxypropylvalerone, a now banned “designer” cathinone, has been found to be 10 times more powerful than cocaine or methamphetamine in animal testing. It would be difficult to determine the cathinone equivalencies with such diverse potency ranges and effects even when the effects of each specific street cathinone molecule are known and many are still unknown at this time.

“Psychoactive Bath Salts” were created to be methamphetamine substitutes but have been found to possess a wider range of physical, behavioral and mental effects including an unusual “zombie-like” affect in the user and a unique “growl” vocalization when one is under their influence. Current “bath salt” using clients enrolled for treatment at the Addictions Recovery Center in Medford, OR were admitted for amphetamine use disorder treatment and some for polydrug, stimulant/opioid use disorders treatment, known as “speed balling.” Management of this “psychoactive bath salt” addiction follows the same clinical interventions as employed in methamphetamine addiction.

The term “psycho-stimulants” occasionally used for some synthetic cathinones accurately described how some of these substances manifest psychedelics (hallucinogenic) effects as well as stimulant effects. New substances

also appear every year and many are not technically cathinones though they may possess the molecular structure activity like that of cathinones. “Benzo Fury” (6-APB or 6-aminopropyl benzofuran), “Flakka” (alpha-PVP or alpha-pyrrolidinovalerophenone), and “Serotoni” (4,4-DMAR or 4,4-dimethyl aminorex) are some of the newer ones to hit the illicit drug market.

My major concern with the synthetic cathinones is really a wider concern about the renewed era of synthetic psychoactive substance abuse brought on by the evolution of chemical sophistication among national and international street chemists. They can continue to modify molecules to stay ahead of identification, legal prohibition and drug testing procedures using the drug abusing subculture to test out their new psychoactive substance often unknowingly. For example, “Molly” is usually a street name for purer forms of “Ecstasy” (methylene dioxy-methamphetamine). Many samples of “Molly” sold at “rave” dance gatherings and elsewhere have been analyzed to actually contain a synthetic cathinone molecule as its active ingredient. Because of continual modification of these molecules, they are initially able to circumvent legal processes but more importantly, this also hampers good clinical practices that are used to assist individuals with substance use disorder recover from their nightmare of addiction and overdoses.

Tetrahydrocannabinol (THC) and Synthetic Cannabinoids

As a clinician, my greatest concern regarding this class of abused substances is that their toxic and addictive properties continue to be ignored or worse, totally denied. Eight to ten percent of marijuana and cannabinoid abusers will meet medical diagnostic criteria for cannabis use disorder and many more will suffer toxic medical or mental health problems from their use. The THC (tetrahydrocannabinol) concentration in phytocannabinoids continue to increase while CBD (cannabidiol) concentrations that can moderate the psychoactive effects of THC decrease in recreational marijuana. Dabbing and other THC extraction processes result in “wax,” “shatter,” “honey oil,” “hash oil,” and more. These substances can have a concentration as high as 95 percent THC. Manufacturers also produce “edibles,” “vapes,” “gel caps,” and other forms of potent THC products.

Marijuana equivalency of one gram of THC = 167 grams of marijuana may have fair validity for phytocannabinoids but there is a problem with the continued hybridization of marijuana creating varying strains of the plant that will have great variability in the 60 or more cannabinoid molecules in cannabis, each with their own effects and interactive properties with the main psychoactive substance, THC. As previously mentioned, CBD will mitigate some THC effects while THCv (tetrahydrocannabivarin) intensifies the effects of THC.

There are now at least nine totally different chemical families used to produce synthetic cannabinoids. Thus, each specific synthetic cannabinoid can have different potencies and diverse behavioral and mental effects from a similar weight dose of the different substance abused. The current identified range in potency of these substances range from 5 to even 800 times more potent than THC. Originally introduced as herbal incense (“Spice,” “K2,” “Kush,” “Kronic,” “Zohai,” et al.) with the false admonishment “Not For Human Consumption,” synthetic cannabinoids are now sold as potpourri, aromatherapy, and vape fluid. Many different families of chemicals are used to make synthetic marijuana resulting in almost an endless number of cannabinoids that can be produced. This enables traffickers to stay a step ahead of legal restrictions and drug testing technologies. New cannabinoid molecules continually replace older synthetic cannabinoids that have been made illegal and/or become detectable by testing.

Clients in treatment for cannabis use disorder demonstrate a withdrawal syndrome, psychosis, intense paranoia and even cannabinoid hyperemesis syndrome in addition to the more commonly seen effects of marijuana.

Fentanyl and Fentanyl Analogues

The United States is now admittedly in the grips of an opioid epidemic with daily overdose deaths exceeding deaths caused by auto accidents or guns. More than six Americans are dying each hour from an opioid overdose. Most of the opioid deaths result from illicit fentanyl analogues also known as synthetic fentanyl or designer fentanyl and sold by street names like “China white,” “gunpowder heroin,” “W-18,” “Pinky,” “U4,” “Chiclets,” “Grey Death,” “TNT,” “Apache,” et al. There are now at least 19 identified fentanyl analogues being abused on the street and only a handful of those can be tested for in body fluids. Fentanyl is 100 times stronger than morphine or 50 times stronger than heroin while Carfentanyl and W-18 have been tested in animals and found to be up to 10,000 times more potent than morphine and 5,000 times more potent than heroin. Due to this huge increase in potency, narcotic officers in various states and even drug sniffing dogs are now required to wear protective gear when investigating or searching for illicit opioids. Fentanyl or its analogues are now being mixed into weaker heroin sale units to increase potency of the product sold and to disguise the presence of the fentanyl if an opioid overdose occurs. Fentanyl analogues have also been used as the main psychoactive substance in counterfeit medications especially counterfeit Xanax® bar tablets.

Clinically, fentanyl and new designer fentanyls do not respond as well to Narcan overdose treatment as do heroin and other opioids. They result in severe withdrawal symptoms that are more difficult to address during detoxification and as with the other synthetics new fentanyl analogues are difficult to detect in urine and other body fluid testing techniques. New synthetic fentanyls continue to be brought in to replace previous ones that were made illegal, have become detectable in drug tests or if they are found to be either too toxic or have severe side effects that limit their marketability.

Morphine equivalent dosing calculation is already in clinical use to determine dosing of medication assisted detoxification or management of pain medications and may offer some insights for sentencing parameters.

Thank you once again for giving me this opportunity to share my experience and concerns about the deluge of new synthetic psychoactive substances that are all too easily finding their way to those struggling with substance-related and addictive disorders. These drugs undermine addiction treatment and drug abuse prevention efforts as well as legal processes. They pose a significant threat to all of our communities.



*Darryl Inaba, PharmD, CATC-V, CADC III, is Director of Clinical and Behavioral Health Services for the Addictions Recovery Center and Director of Research and Education of CNS Productions in Medford, OR. He is an Associate Clinical Professor at the University of California in San Francisco, CA, Special Consultant, Instructor, at the University of Utah School on Alcohol and Other Drug Dependencies in Salt Lake City, UT and a Lifetime Fellow at Haight Ashbury Free Clinics, Inc., in San Francisco. Dr. Inaba has authored several papers, award-winning educational films and is co-author of *Uppers, Downers, All Arounders*, a text on addiction and related disorders that is used in more than 400 colleges and universities and is now in its 8th edition. He has been honored with over 90 individual awards for his work in the areas of prevention and treatment of substance abuse problems.*