

Buffered Aerosol Drug-Delivery, A Review

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Author Biography

Zayd Turbi



Over the past five years, he and his team at The Jones Labs, Inc. have launched a new class of vaporizer technology patents beginning with Buffered Aerosol Drug-Delivery as the core paired with a series of devices for optimal Active Pharmaceutical Ingredient delivery via GRAS or natural excipients.

Before that, he started his career in chemistry as a researcher with Molecular Assemblies, Inc. and then as an Oligonucleotide Synthesis Chemist at Eton Bioscience, LLC. During his studies at UCSD, which focused on a Biochemistry/Chemistry B.S., he first interned with and then got hired full-time by Bill Efcavitch, PhD., Curt Becker MBA, and Scott Petersen PhD.

As we look to the future, The Jones Labs, Inc., using his technology, seeks to make meaningful strides towards universal smoking cessation. This includes all forms of combustion as well as traditional cigarettes.

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Abstract

Electronic cigarettes, Electronic Nicotine Delivery Systems, and vaping devices, in general, are safer alternatives compared to conventional burn-down cannabis and tobacco products. This article seeks to elucidate the potential for a more generic form that would be more appropriate for the protecting of public health; electronic drug-delivery systems or EDDS. The technology of electronic cartomizers and nebulizers have been conceptualized, patented, and marketed for nearly a century, yet only recently have electronic cigarettes finally surpassed traditional combustible cigarettes in seeming safety and efficacy for electronic nicotine drug-delivery. Following this line of thought leads to a valuable opportunity in the logical conclusion that if nicotine salts can be consumed en masse via these device technologies, then there exists the potential for multitudes of new therapies delivering generic and novel pharmaceuticals.

INTRODUCTION

Nicotine salts have existed as long as the plant itself has, yet mankind only began using them industrially in the 1980s as a measure to normalize the amount of nicotine across the cigarette batches of RJ Reynolds other major companies. Their popularity rose recently with the advent of electronic cigarettes and smokeless tobacco technology in the past couple of decades.

Surprisingly, few have sought to maximize the benefits of their technology for therapeutic drug delivery, yet this could be due to the controversial nature of tobacco [1-5].

In recent years, the use of ketamine and psilocybin have revolutionized their own treatment sectors across America. These compounds remain a schedule I controlled substances. These recent developments necessitate a regulatory reassessment because of their currently accepted medical uses. While researchers open their minds to these less conventional drugs, one would expect that to extend to non-traditional methodologies [7,8].

Antithetically, Australia seeks to outright ban electronic cigarette technology, and this knee-jerk reaction was echoed by South Africa. Both nations have well-known records of passing onerous laws for their own native populations, proving themselves to be just as uninformed as ever in terms of effective policy. At the risk of losing their medical licenses, a handful of doctors are fighting back by writing prescriptions as the only exception to the detrimental regulation in Australia, but in South Africa it seems Big Tobacco remains the only proponent left.

The potential methodologies could be a panacea for a multitude of diseases at a fraction of the cost. Offering hope for patients and opening more avenues of research to the astute operator that takes this mantle. Ironically, the family of receptors that have been recognized as viable targets for both pharmacology and toxicology has nicotine in their own title; Nicotinic Acetylcholine Receptors [10-12]. Therefore, this sets the stage even more for research into buffered aerosol drug-delivery as a cheaper, more efficient means for therapy [5].

DISCUSSION

Although tobacco, mushrooms, and ayahuasca have been used for centuries by indigenous peoples, there does need to be more research into nicotine, psilocybin, and dimethyltryptamine for the optimization of their therapeutic benefits. This type of research had been the victim of the counterculture clash and resultant political backlash of the '50s and '60s that ended all funding into non-traditional therapeutics. It was this political wave that fostered the Drug Convention under Nixon in the '70s. In comes, political theater, and out goes scientific reasoning for the rest of the Cold War. The biggest victim here being psychotherapy and mental health treatments of the past 50 years [7].

Furthermore, if we were to use nicotine salts as a model for nitrogenous alkaloid salts, then we could be in the beginning stages of a monumentally game-changing Structure-Activity Relationship Study. Let the EVALI crisis of 2019 set the limit for dangerous structures to be inhaled, as

exemplified by Vitamin E Acetate, and the decades of tobacco smoke shows nicotine salts as safe and efficient at the same time. Though salts are already employed across the medical and pharmaceutical spectrum, nicotine salts' potential without the combustible cigarette smoke as dopaminergic therapeutics should not be ignored. The affected family of receptors having long been recognized as drug targets for ADHD, Alzheimer's, autism, depression, Parkinson's, schizophrenia, smoking cessation, epilepsy, and pain serves as reason enough [9-12].

Anxiety, depression, and addiction have plagued mankind since their root words were derived. For as long as those disorders have bothered humans, indigenous society had their tribal medicine man to help assuage such demons with any combination of herbs, fungi, and/or roots. The Incans would chew on coca leaves.

The Apache did spirit walks on peyote or mescaline. The rest would use sages and tobacco, among other natural products. The inspiration for most of this recent psychedelic renaissance comes from these native, tribal practices that have seen centuries of use in steam huts.

Fortunately, in 2019 the FDA has started to catch up on psychedelic natural products and their dopaminergic regulatory potential [9-13].

Thus, this combination of herbs can be safely and efficiently revisited via electronic drug-delivery systems. From anecdotal evidence, users of ketamine or psilocybin remark on a seeming micro-dose when smoked with cannabis, tobaccos, or other filler, yet generally consider it a waste of the drug. Since vaporizer technology lowers the temperature range for the aerosol generation of the active pharmaceutical ingredient incorporated, these and many other compounds could be reassessed for inhalable safety and efficacy [5].

CONCLUSION

Currently, the state of modern research suggests a mobilization of modalities previously written off for seemingly legitimate reasons. Let us stamp out all smoking and completely replace it with vaping. If one truly advocates for Nicotine Replacement Therapy, replacing the carcinogenic smoke proves just as big a win as lowering the dosage of nicotine. Finally, with the combustion removed, nicotine could be reassessed as a co-salt for a multitude of dopaminergic formulations, especially via the novel drug-delivery of aerosol buffers [5].

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ABBREVIATIONS

ENDS, Electronic Nicotine Delivery System; E- CIG, electronic cigarette; Glycerin; Free Base Nicotine; NRT, Nicotine Replacement Therapy.

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