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## Secondhand marijuana smoke may harm blood vessel function as much as cigarette smoke

By Melinda Carstensen

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Secondhand marijuana smoke may pose a similar health risk to that of tobacco, suggests new research presented at the American Heart Association's Scientific Sessions 2014 in Chicago.

In the study, lab rats' blood vessel function declined by 70 percent after 30 minutes of exposure to secondhand marijuana smoke. When researchers removed tetrahydrocannabinol (THC)— the compound in marijuana that causes intoxication— from the smoke, the animals' blood vessel function was still impaired.

"I think that a lot of people in the general public look at it this way: I don't want to breathe in cigarette smoke, but marijuana doesn't have nicotine— it's natural. It's medicinal," senior author Matthew L. Springer, associate professor of medicine at the University of California, San Francisco's cardiology division, told FoxNews.com.

Springer said he thought to explore the potential effects of secondhand marijuana smoke a few years ago while attending a Paul McCartney concert. People in the stands at AT&T Park, where the San Francisco Giants play, began lighting up, and Springer said he was surprised by the smell.

"A cloud of smoke was hovering over the field, and Paul McCartney was on stage and sniffed the air, and joked, 'There's something in the air, and it must be San Francisco,'" Springer said.

Despite new legislation expanding the legality of recreational marijuana in Colorado, Washington State, and most recently in Oregon and Washington D.C., no study has previously explored how secondhand marijuana impacts blood vessel function— much of the research has been focused on how marijuana affects the lungs.

One side effect of marijuana smoking is poor blood vessel function, which can lead to an increased risk of atherosclerosis, which causes plaque build-up in the arteries, restricts blood flow and could lead to a heart attack, according to the American Heart Association. Smoking cigarettes can also increase the risk of atherosclerosis.

To analyze marijuana smoke's impact on blood vessel function, the study authors reproduced marijuana smoke with a machine and placed rats in an insulated room. Prior to the exposure, as well as 10 and 40 minutes afterward, researchers measured the ability of the rats' blood vessels to grow in diameter. Using a high-resolution micro-ultrasound, they measured blood vessels prior to blocking blood flow in the rats' legs for a baseline reading, and then again after releasing the restriction and letting the blood rush.

"In humans, you can measure that and take it as an indication of vascular health," Springer said, pointing out that humans' blood vessel function is usually measured by restricting blood flow in the arm. "If a vessel grew by 10 percent during the flow-mediated dilation (FMD) of the artery, that person was considered to have a well-functioning blood vessel."

As exposure time increased, the rats' FMD levels decreased, indicating reduced function. Normal vessel function had not returned 40 minutes after exposure to the marijuana smoke. In previous research of secondhand tobacco smoke, blood vessel function had returned in that amount of time.

That blood vessels were still impaired after exposure to THC-free smoke suggests that the compound isn't the cause for reduced function, the researchers noted.

"Everything that we're showing in this study isn't an effect of THC," Springer said, "so if someone eats marijuana, [blood vessel impairment] isn't necessarily going to happen."

Springer said their findings aren't surprising when one considers the physical and chemical similarities between tobacco and

marijuana smoke—when tobacco and marijuana plants burn, an estimated 4,000 to 7,000 chemicals are released.

Next, researchers plan to expose rats to cigarette smoke repeatedly to see if there's a long-term effect on their blood vessel function. Based on previous findings, Springer said the results of cigarette smoke would likely be consistent with that of marijuana smoke.

As laws permitting recreational use of marijuana are passed across the U.S., Springer said his team's preliminary findings have the potential to help legislators set rules on where people are and aren't allowed to smoke, just like tobacco.

"From my standpoint, I've always been concerned about bystanders who don't want to inhale smoke," Springer said. "I think that the smokers should know what they're doing to the bystanders, and the bystanders should be aware of what they're exposing themselves to. If they are inhaling marijuana smoke, they are probably being affected in a similar way to tobacco smoke."

Springer pointed out that the researchers modeled two different levels of marijuana smoke from previous studies on tobacco smoke exposure. The effect on blood vessel function was the same at both levels.

"Very little is known about ambient levels of marijuana. All we could do was [provide] identical levels of tobacco smoke." Based on their findings, Springer advised, "Whatever level you would not want to expose yourself to tobacco smoke, don't expose yourself to marijuana smoke. But we can't give you a magic number saying, 'This is bad and this is good.'"

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## **Dangers of e-cigarettes overstated**

**By Matt Waggoner | Posted: Saturday, February 7, 2015 12:00 am**

### **Fairbanks Daily News-Miner community perspective:**

In response to Kristin Cox's Community Perspective titled "E-Cigarettes come with their own risks," published on Jan. 15, I have a few concerns and observations that I feel should be pointed out, as the general public needs to hear both sides of the story.

Before I elaborate, I would like to commend Ms. Cox on her work in tobacco prevention. Tobacco has arguably been one of the greatest health threats to general society and she and others like her work tirelessly to combat that threat.

On the issue of electronic cigarettes and vaping products though, it seems our views diverge. Before I continue, I should state that I am an Alaskan owner of a small chain of vapor shops.

Electronic cigarettes are not risk free. Nicotine can be dangerous. Those are facts and they are impossible to argue.

E-cigarettes are simply alternatives to smoking — an alternative that doesn't include smoke, tar, ash and the host of ancillary byproducts that comes from combustion. And no, its certainly not "harmless water vapor," but in an academic study from Drexler University, titled "Peering Through The Mist: What does the chemistry of contaminants in electronic cigarettes tell us about health risks?" Dr. Igor Burstyn finds "... current data do not indicate that exposures to vapors from contaminants in (e-cigarettes) warrant a concern."

Electronic cigarettes should be kept out of the hands of kids — period. Ms. Cox referenced a Centers for Disease Control statistic that states in the last three years, usage by adolescents has increased by a factor of three.

While this is obviously alarming, it should be taken in context. E-cigarettes were almost completely unknown three years ago — and since the industry has grown exponentially in the interim, it must be expected that usage amongst all groups will increase.

But while opponents argue that selling certain types of vapor equipment or flavors of e-liquids illustrates a direct attempt at marketing to kids, the effort to curb this trend really needs to lie in effective parenting, education and legislation that bans sales of and vaping product to children.

Being in this industry and owning stores across geographical territories gives us the ability to really put our ears to the ground and get feedback from the general public.

With more than 10,000 customers, I'd like to believe our sample set is robust enough to spot trends in the market. And that feedback — e-cigs are effective. Though our customers understand there are still possible risks — they feel empowered to leave the lifestyle of conventional tobacco use behind.

They don't stink, they feel healthier and they are empowered to control their habit. They can choose a flavor that doesn't remind them of cigarettes and they can choose their own nicotine levels. And the vast majority of our customers? They no longer smoke and are repulsed by the scent of a lit cigarette.

Let's not forget that this industry is often misclassified as "Big Tobacco." Sure, the traditional players are certainly selling their own brands of e-cigs, but by and large this is small business.

This is Main Street America. This is entrepreneurs and local mom and pop's opening up shop — not necessarily with profit motives (though it always helps) but with the ambitious goal of sharing what has been effective in their life to others — vaping.

In fact, Time Magazine recently described the vaping industry as "Smoking Anonymous" analogous to "Alcoholics Anonymous" in that if you spend any time in a vape shop — you'll likely find enthusiastic people extolling the virtues of vaping and the significant differences that they have experienced in their own life from the switch.

In sum, we urge consumers and legislators to tackle this issue with responsibility and an open mind to the issues.

After all, the vaping industry is attempting to eliminate the vernacular of smoking altogether. Charles Connor, president and CEO of the American Lung Association from 2008-2012, stated "e-cigarettes may be the breakthrough product that stomps out carcinogen-packed conventional cigarettes."

If regulation is too aggressive and not based on scientific facts, we risk losing, as Ms. Cox so eloquently quoted, "The single most cost-effective life-saving innovation in the world."

Matt Waggoner is the owner of Fatboy Vapors Alaska, LLC. He lives in Anchorage.