

Are Caffeine and Nicotine Comparable?: Assessing the Implications for Future Research

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Via: <http://www.dailymail.co.uk/femail/article-2893137/Why-not-booze-2015-morning-treat-coffee.html>

Abstract

The tobacco research and public health fields have had an increasingly polarizing debate on whether or not caffeine and nicotine are comparable. For our research, we used two databases using a combination of keywords. In this research, the focus is on the substances nicotine and caffeine, not tobacco or caffeine products. As such, we reported on only the articles that presented their data in this way. We organized our data into tables to visually show our findings on the measures of addiction, positive health effects, and negative health effects. We found through our analysis that though nicotine and caffeine are similar in positive health effects, the two substances are significantly different in their reported addictive qualities and negative health effects. Because of this difference, it is our conclusion that the two substances aren't exactly comparable to each other. This is particularly significant given the larger context of the rise in e-cigarette use among certain groups.



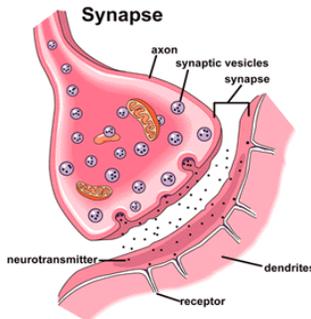
Via: <http://www.fda.gov/TobaccoProducts/Labeling/ProductsIngredientsComponents/ucm456610.htm>

Introduction

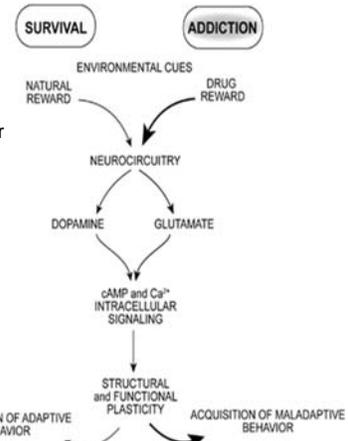
In the public health community there is a growing debate on the health effects of nicotine and caffeine. However, this debate is rarely put so plainly. Most of the time, the debate on nicotine and caffeine is talked about in terms of the substances' proxies—e-cigarettes and coffee. When researching the health effects of the two substances, it is important to note that their comparative addictiveness has yet to be established. Some research purports that they are similar, while others refute the idea, it is important to keep this in mind when comparing the two. Given our lack of comprehensive research comparing the two, this research was done for the purpose of laying the groundwork for future research.

Methods

For this research, databases included in the search were PubMed and EBSCOhost. Articles were searched for using combinations of relevant keywords. Articles used in this review were all published after 1980. This range of time is notable because research on nicotine has been pretty constant through the years, yet very few articles have been written on the properties of caffeine. The search concluded with finding 57 articles that pertained to the area of interest. Articles were taken out if they didn't report their results as nicotine-specific or caffeine-specific. Also, articles that were not about health effects and/or the addictive qualities of the substances were not included in the analysis.



Via: <http://www.bodecology.com/index.php/bod-e-411/319-day-23-synapse>



Via: <http://journal.frontiersin.org/article/10.3389/fnana.2011.00060/full>

Results

Figures 1,2, and 3 show how nicotine and caffeine stack up against each other when it comes to "measures" of addiction, positive health effects, and negative health effects—respectively.

"Measure" of Addiction	Nicotine	Caffeine
Tolerance	✓	?
Withdrawal	✓	✓
Neural Pathway of Addiction	✓	?
Affects Synaptic Plasticity	✓	?

Figure 2: "Measures" of Addiction for Nicotine and Caffeine.

Positive Health Effects	Nicotine	Caffeine
Improved Mood		✓
Improved Cognition	✓	✓
Increased Vigilance	✓	✓
Improves Energy	✓	✓

Figure 2: Positive Health Effects of Nicotine and Caffeine

Conclusions

The health effects of nicotine and caffeine have proven to be similar in parts, but with notable differences, which makes the case that nicotine is not equal to caffeine. There is a lot at stake when it comes to the consumption of nicotine, and since caffeine is seen as a relatively harmless substance, equating the effects of nicotine to caffeine could be harmful to public health as a whole.

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Negative Health Effects	Nicotine	Caffeine
Withdrawal symptoms	✓	✓
Insomnia		✓
Neuronal Apoptosis	✓	
Increased Blood Pressure	✓	✓
Increased Heart Rate	✓	✓
Increased Risk with CVD	?	
Impair Fetal Development	✓	
Low Birth Weight	✓	✓?
Reduction in Fertility		?
Genetic Capability	✓	
Overdoses	✓	✓
Complications for Diabetics	✓	
Tumor Promotion	?	

Figure 3: Negative Health Effects of Nicotine and Caffeine.