

E-Cigarettes: How Much do we Know about Them? A Study on the Composition of the Vapour and Harmful Effects on Health and the Role they Play in Reducing Harm and Treating Nicotine Addiction

<https://doi.org/10.32635/2176-9745.RBC.2018v64n4.210>

Cigarros Eletrônicos: O que Sabemos? Estudo sobre a Composição do Vapor e Danos à Saúde, o Papel na Redução de Danos e no Tratamento da Dependência de Nicotina

Cigarrillos Electrónicos: ¿Qué Sabemos? Estudio sobre la Composición del Vapor Y los Daños a la Salud, el Papel en la Reducción de Daños y en el Tratamiento de la Dependencia a la Nicotina

*Instituto Nacional de Câncer José Alencar Gomes da Silva. Rio de Janeiro: INCA; 2016. 120p.
ISBN 978-85-7318-287-3 (versão impressa)
ISBN 978-85-7318-288-0 (versão eletrônica)*

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Tobacco addiction is considered a serious public health issue. A disease – drug nicotine dependence – which is also a hazard factor for innumerable other diseases, among them, several types of cancer, cardiovascular and lung diseases. It is the single greatest preventable cause of disease and death, responsible for more than seven million deaths every year according to WHO – World Health Organization (OMS)^{1,2}.

Several are the tobacco products consumed worldwide, but industrialized cigarette became a significant landmark for the expansion of the tobacco epidemics and to this date is the most widely consumed^{3,4}.

Control actions since 1980 had gain momentum in Brazil and are aligned with a world network where the elaboration and implementation of the first public health world treaty, the WHO Framework Convention on Tobacco Control, of which Brazil is a signatory. These worldwide-orchestrated initiatives have contributed for the reduction of the tobacco epidemics, that was also significant in Brazil. However, the challenges are many and daily. One of these challenges was the commercialization of e-cigarettes that stimulated countries, governments, scientific and public health community to produce and pursue scientific evidences to support the decisions addressing the regulation of these products⁵.

In this scenario, the “Instituto Nacional de Câncer José Alencar Gomes da Silva (INCA)” published the book “*Cigarros Eletrônicos: O que sabemos? Estudo sobre a composição do vapor e danos à saúde, o papel na redução de danos e no tratamento da dependência de nicotina*” (*E-Cigarettes: How much do we know about them? A study on the composition of the vapor and health harmful effects and the role they play in reducing damages and treating nicotine addiction*). It is a work of the physician Stella Regina Martins, of “Universidade de São Paulo”, result of a wide review of scientific articles and other publications and of a partnership between “*Organização Pan-Americana da Saúde (OPAS/WHO)*”, the Brazilian Health Regulatory Agency (ANVISA) and INCA. Based in this review, its objective was to supply evidence-based material to “*Coordenação de Prevenção e Vigilância (CONPREV)*” of INCA and “*Gerência Geral de Produtos Derivados do Tabaco (GGTAB)*” of ANVISA“.

The book has nine chapters and Final Considerations about the theme. The first five chapters provide substantial material, which allows the contextualization of the tobacco scenario and actions for its control in Brazil and in the world, and the moment when e-cigarettes appeared. The chapters are: Epidemiology of tobacco-addiction in Brazil and in the world; Public Policies in Brazil and in the world; Physiopathology of nicotine dependence; Tobacco-related diseases and Cost of Tobacco-addiction in the world and in Brazil.

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The following chapter, *Electronic Cigarettes*, approaches the theme directly, with the description and composition of the product aimed to deliver tobacco leaves-originated nicotine as aerosol and some of them are traded nicotine-free. There is a huge and diverse number of models, but, overall, they are lithium battery-fed mechanic-electronic devices. Its interior has space to insert the cartridge or refill where liquid nicotine, available in different concentrations, is stored. The atomizer is responsible for warming and vaporizing the nicotine.

The author describes several models of e-cigarettes available in the market and the composition of the vapors absorbed by the users of these products. It focus in two solvents, glycerol and propylene glycol, that once warmed at high temperatures, produce low molecular weight compounds as formaldehyde, acetaldehyde, acrolein and acetone, substances classified as cytotoxic, carcinogenic, irritating, causes of pulmonary emphysema and dermatitis. The aforementioned composition is presented in spreadsheets and charts, comparing with regular cigarettes, further to a description of health damages.

Still in the same chapter, cases and risks of intoxication provoked by nicotine cartridges or refills in adults, infants and children, signs and symptoms of intoxication by intake of nicotine are described, and concludes with already documented cases of explosion of the device.

The following chapter describes in detail with relevant illustrations as complementation of the content, the aspects related to commercialization and consumption of e-cigarettes. The topics of the chapter are: advertising – repetition of the strategies used by the tobacco industry for commercialization of e-cigarettes, prevalence (with world data about the consumption), warning messages (already been adopted in countries where these products are licensed) and financial interest of the tobacco industry in this market.

The idea of risk reduction is approached in chapter 8 with the initial concept proposed for public health within the context of the use of psychoactive drugs. Next, the author addresses the use of this concept applied to tobacco-addiction, with a parallel between what it means for public health through tobacco control policies and what the pharmaceutical and tobacco industries propose.

Chapter 9 deals specifically with the treatment of nicotine dependence, describing what the current evidences about the theme are so far, in addition to researches, and substantiation about the possible use of electronic cigarettes for that purpose.

In her final considerations, the author indicates the great number of questions without answers about the effect of e-cigarettes on the health of the individuals, the collective health and the tobacco control policies that have been successful. She acknowledges the incoming of e-cigarette in the tobacco scenario as a challenge to be faced and recommends the communication and supply of information to the population about the theme; monitoring the use through several and comprehensive researches; follow up of new studies and evidences that happen to come up, organization of the material to support the respective organs, emphasizing the low quality of the methodology of the majority of the studies published so far and the necessity of more investigation. And for the sake of precaution and prevention, the author finalizes: “it is not possible to recommend the regulation of e-cigarettes as a tobacco product”.

This work is considered essential to support the discussion about e-cigarettes in the country. The author is an expert in tobacco dependence treatment and tobacco control and focused specialist. In the last years, she concentrated her attention to electronic cigarettes, participating of several scientific and consulting forums. The book reflects her profile. It is well designed, organized, clear and fairly comprehensive of the material researched. In addition, she wisely included the core question in a wider context, which facilitates and supports the considerations. The reader is able to go through the logic path and together with the author, reach the conclusions and recommendations proposed. The book fulfilled its initial objective and, most likely, is a good indication for all who wish to know or to delve into the subject.

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Recebido em 18/4/2018
Aprovado em 14/8/2018