MEDIUM-LONG TERM STORAGE CONDITION OF CAMBRIDGE FILTER PADS (CFPs) FOR NICOTINE DOSIMETRY

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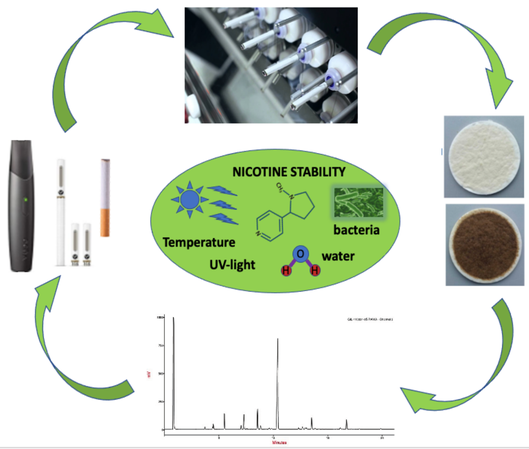
GRAPHYCAL ABSTRACT



INTRODUCTION

Nicotine is an alkaloid extracted from tobacco leaves. It is a dibasic compound with pyridine and pyrrolidine rings and a pKa of 8.5. Nicotine is water soluble and separates preferentially by organic solvents depending on the solution pH. Its degradation mechanisms include **photolysis, thermolysis, oxidation, and hydrolysis**.

Since the rising numbers of comparison studies between cigarettes and electronic nicotine delivery products (ENDs) in order to a better evaluation of health human effects, **it would be necessary to establish a storing protocol for CFPs containing nicotine post exposure.**

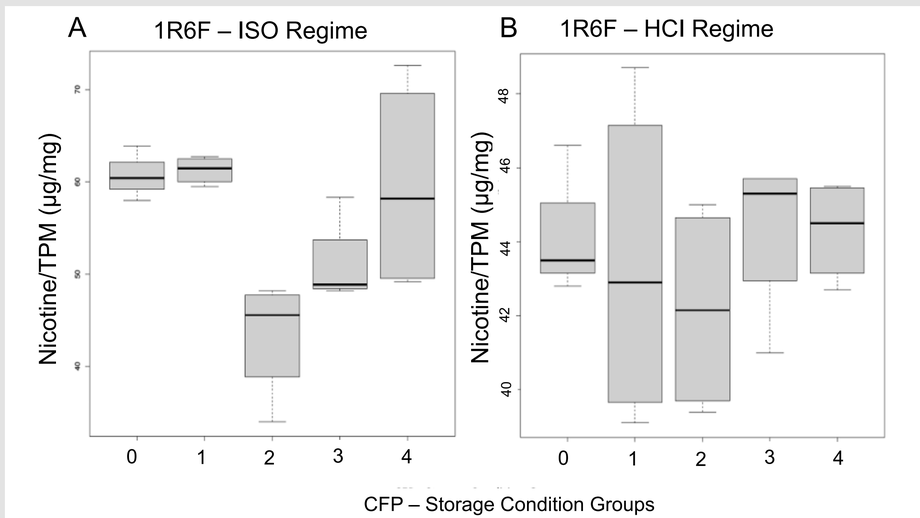
The aim of the present study was to assess the **medium-long term storage condition** of Cambridge Filter Pads (CFPs) for nicotine dosimetry.

CONCLUSION

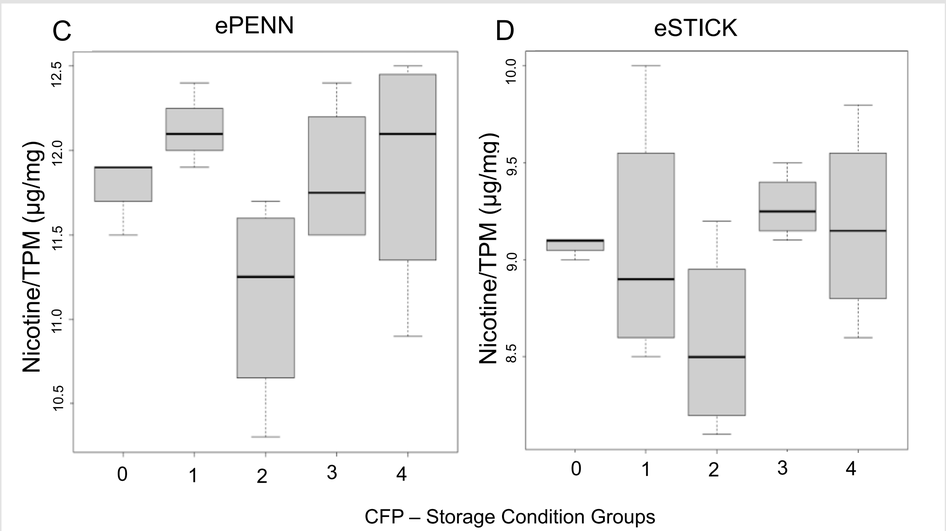
The study shows that different exposure regimes and different products can affect the stability of nicotine in CFPs and **storage of samples at -80 °C prevents loss of nicotine. These conditions are the best recommended** in order to ensure proper harmonization of exposure tests in multicentric studies and nicotine analysis over time.

RESULTS

Under ISO regime, we observed a **significant difference of mean value between CFP groups stored at room temperature and at temperature of -20°C (p<0.05)**. Moreover, the data shows **a significant difference of variance within CFP groups stored at room temperature**. For Vype ePen, **a significant difference (p<0.05)** was observed for the mean value of the CFPs group stored in solvent, higher than the mean value of CFPs of the control group.



0= time zero; 1=room temp. (25°C) in solvent; 2= room temp. (25°C) dry; 3= -20°C dry; 4= -80°C dry



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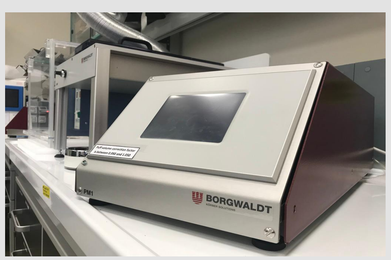
METHODOLOGY

Smoke/vapor was generated by a reference tobacco cigarette (1R6F) and Electronic Nicotine Delivery Systems (ENDS) under different exposure regimes (ISO, HCI and CRM81) and collected in CFPs.

Data about **nicotine was normalized by Total Particular Matter**. **One sample t-test and Kruskal-Wallis** test were performed to assess statistical differences between CFPs analyzed at time zero (control group) and the others stored under different conditions (**solvent, room temperature, -20°C and -80°C**) and analyzed after **30 days.**



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- Pietro Zuccarello, et. Al, Nicotine dosimetry and stability in Cambridge Filter PADs (CFPs) following different smoking regimen protocols and condition storage.bioRxiv 2020.09.09.289371; https://doi.org/10.1101/2020.09.09.289371