NICOTINE CONTAMINATION ON SOFT CONTACT LENSES OF DIFFERENT MATERIALS

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INTRODUCTION

- **Deposits on the surface of contact lenses (CL) can have a negative impact on tear film, ocular surface, comfort and ultimately on vision performaces**
- **Nicotine, present in smoke, can deposit on CLs[1]**
- **Both smokers and non smokers are exposed to nicotine**

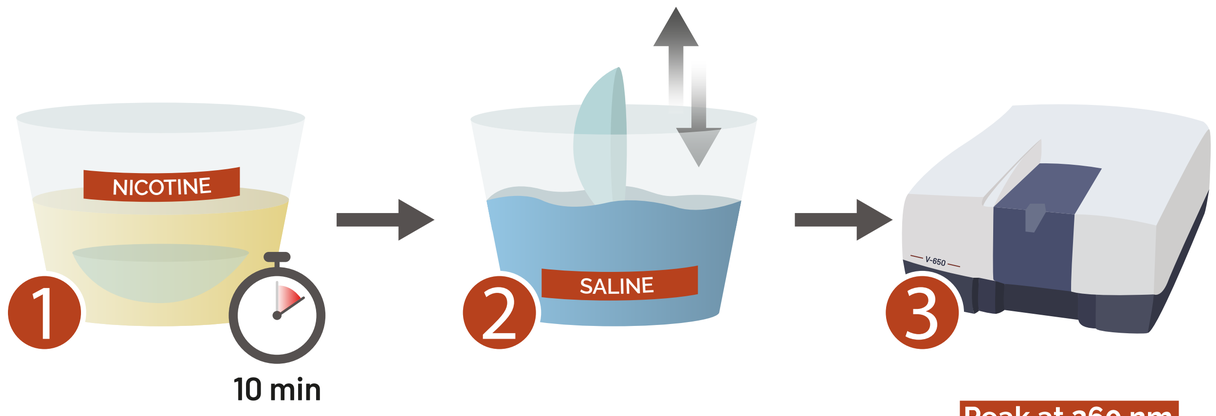
PURPOSE

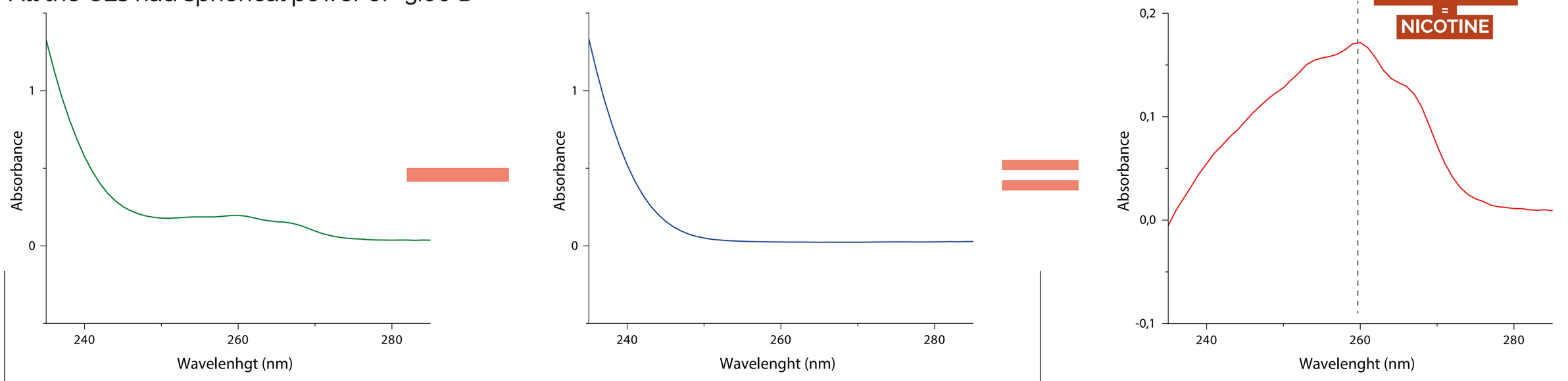
Comparison of *in-vitro* NICOTINE CONTAMINATION on different CL materials

METHOD

1. **Exposition of each lens for 10 minutes to a 2mM nicotine solution**
2. **Brief rinse in saline solution**
3. **Analysis with spectrophotometer Jasco V-650**

12 different CL materials were studied
All the CLs had spherical power of -3.00 D





The spectrum of the clean CL was numerically subtracted from the spectra of each CL after the exposure to the nicotine solution

A peak centered at about 260 nm suggests the presence of nicotine[2]

Measured absorbance was then compared to expected absorbance at the equilibrium (assuming a CL hydration with 2 mM nicotine solution)

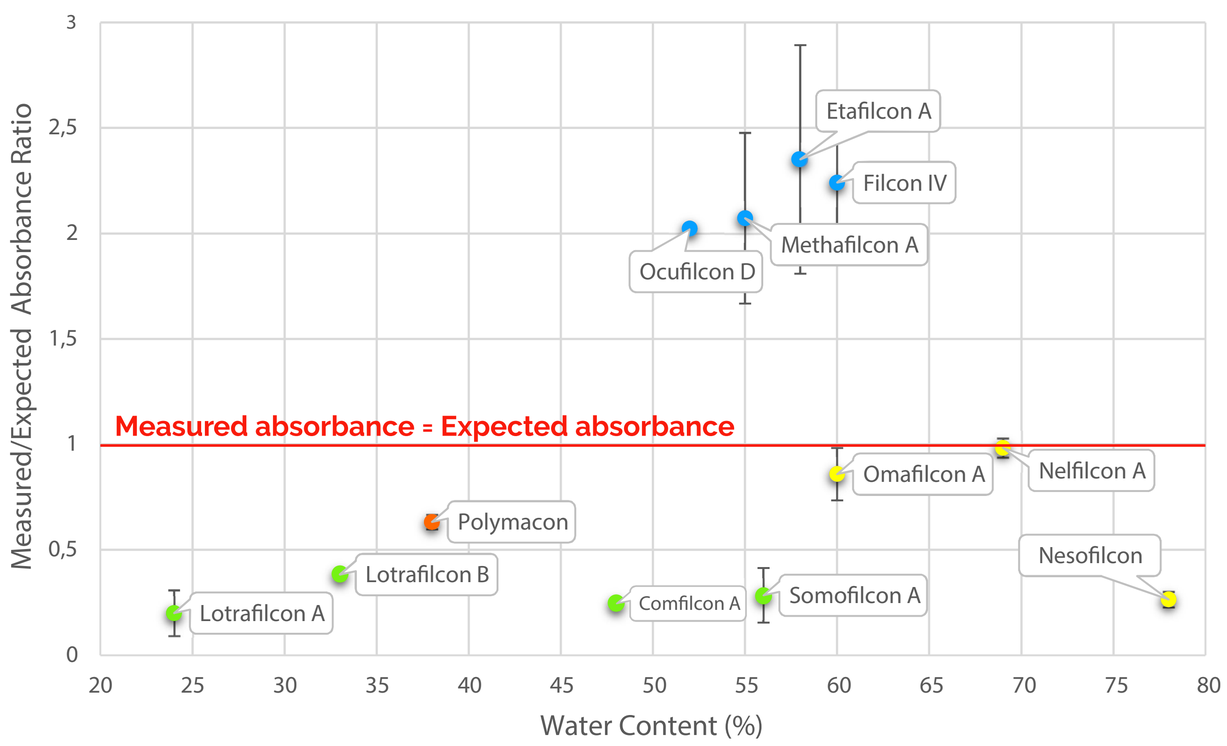
MEASURED/EXPECTED ABSORBANCE RATIO

Relative value which allowed a comparison of the nicotine incorporation in the investigated materials

RESULTS

FDA Group	Measured/Expected ratio (Range)
I	0.2 - 0.4
II	0.8 - 1.0*
IV	2.1 - 2.4
V	0.2 - 0.4

* **Discrepancy: Nesofilcon A measured/expected ratio was 0.3**



CONCLUSIONS

Similar affinity for materials of the same FDA Group

CL chemical properties affect *in-vitro* nicotine affinity

HIGHEST AFFINITY
Group IV
Ionic high water

LOWEST AFFINITY
Group V
Silicone hydrogels

Downloadable at:

FUTURE PERSPECTIVES

Longer exposition to nicotine
Exposition to nicotine aerosol

1. Broich JR, Weiss L, Rapp J. Isolation and identification of biologically active contaminants from soft contact lenses. I. Nicotine deposits on worn lenses. Investigative ophthalmology & visual science. 1980 Nov 1;19(11):1328-35.
2. Clayton PM, Vas CA, Bui TT, Drake AF, McAdam K. Spectroscopic studies on nicotine and nornicotine in the UV region. Chirality. 2013 May;25(5):288-93.