

8th Summit Tobacco Harm Reduction

Novel products, Research & Policy

by **S@HRE**

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Basil & Elise Goulandris Foundation

#NoSmokeSummit25
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ORAL
PRESENTATION

09

Toxicant and in-vitro toxicological assessment of oral nicotine pouches (ONPs): comparative quantitative analysis with Swedish snus and cigarette smoke

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ORAL NICOTINE POUCHES

USE



Consumers place the pouch between their gum and upper lip

COMPOSITION



FLAVOURINGS



PLANT-BASED
MATERIALS



NICOTINE



SWEETENERS



WATER

ONPs mainly contains water, plant-based materials, flavourings, sweeteners and nicotine. All prepacked in small pouches

COMPLEXITY



>7,500
individual chemicals present¹



100s of
individual chemicals present



10s of
individual chemicals present

No external heating or tobacco makes Oral Nicotine Pouches BAT's **simplest Smokeless Product**

NO TOBACCO

NO COMBUSTION

NO SMOKE

NO TAR

STUDY DESIGN SUMMARY

SAMPLES



TOXICANTS

129* analytes selected from
established lists:



List of harmful and potentially harmful
constituents (HPHCs) in tobacco
products and tobacco smoke

International Agency for Research on Cancer



IARC Monographs on the Evaluation of
Carcinogenic Risks to Humans Volume 89
Smokeless Tobacco and Some Tobacco-specific
N-Nitrosamines

*excluding water, mass & pH

SAMPLE GENERATION



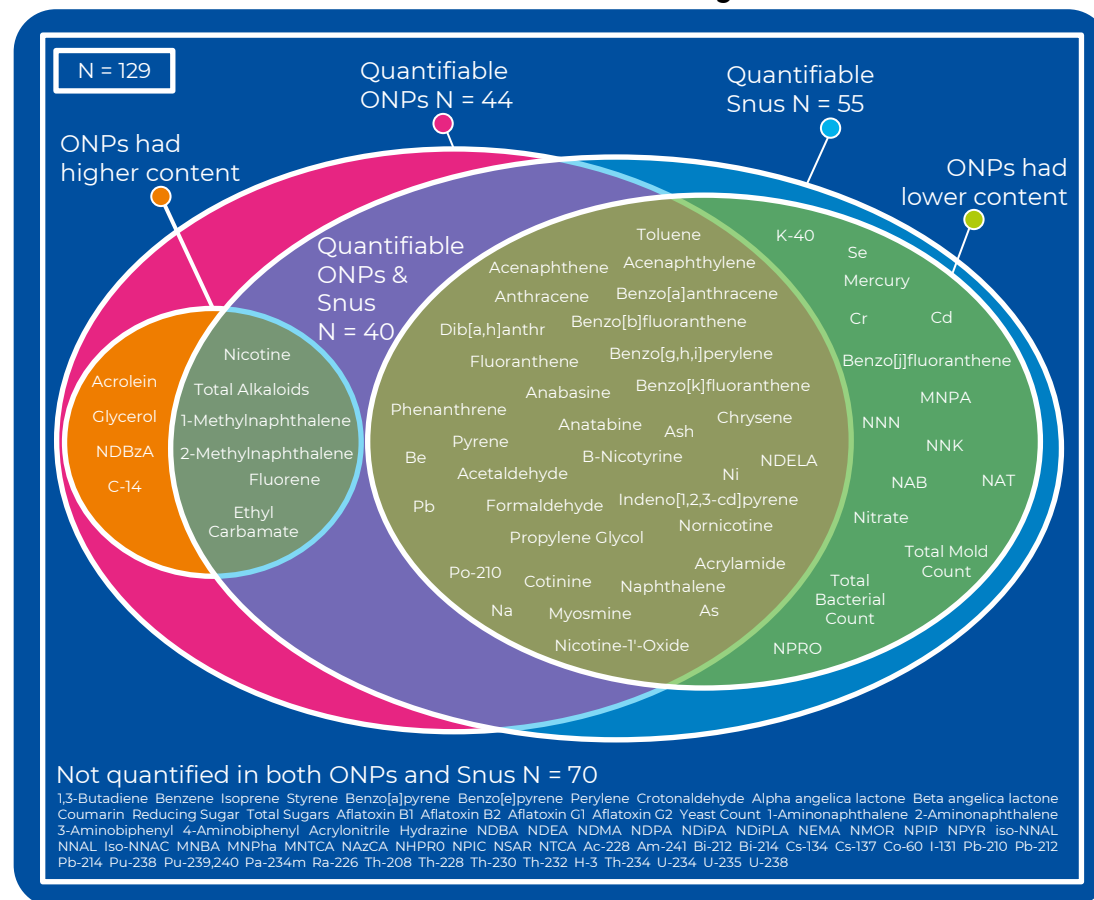
Data generated on a 'as is' per pouch basis

- ONPs were analysed as a combined sample of fleece material and pouch contents.
- Assumption that the pouch is fully exhausted during use

- One or more pouches per replicate (depending upon weight, 1g required for testing)
- Five replicates in total, one replicate per can
- Due to no aerosol emissions, CO, NO, NOx were not measured

ONPs TOXICANT PROFILE

Data Summary



TobReg 9 reference product comparison¹



Oral Nicotine Pouches* had

>99 – 99.8%

less toxicants compared to 1R6F
reference cigarette 30-day average

*11 products tested

BAT ONPs** had

42 – 92%

less toxicants compared to
Snus reference product

**9 products tested

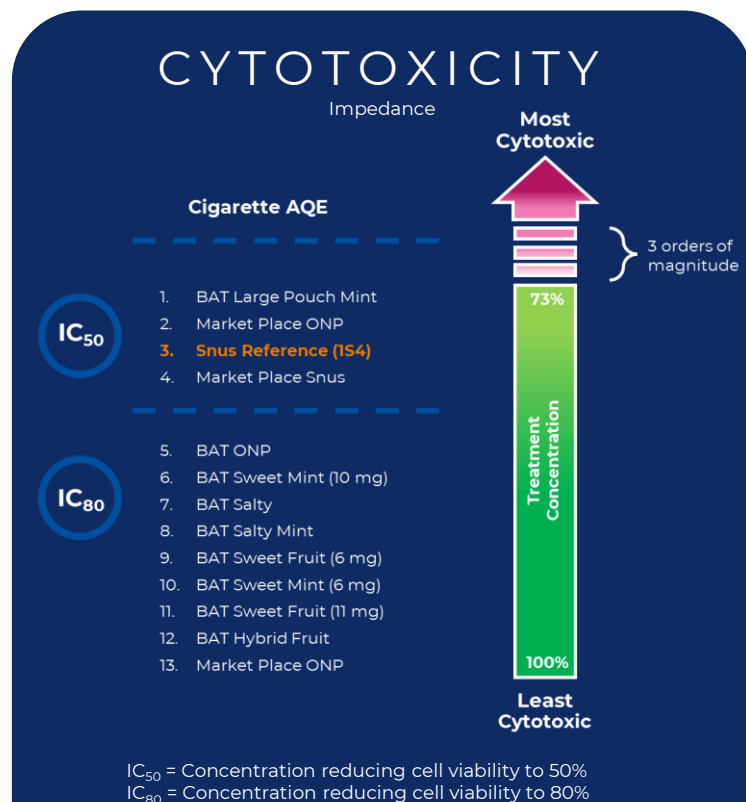


All samples were lower than the
GothiaTek® standard for analytes tested

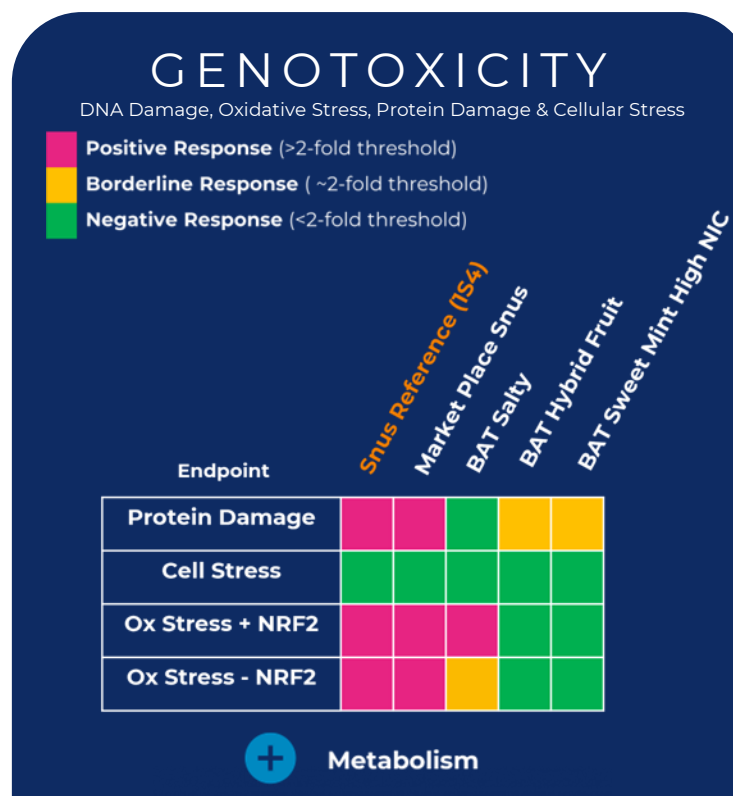


IN VITRO TOXICOLOGICAL ACTIVITY OF ONPs

ONP nicotine levels range from 6 mg/pouch to 20 mg/pouch



Real-Time Cell Analysis



1. None of the BAT ONPs showed more overall in vitro toxicity than the **snus reference (1S4)**
2. Data suggests nicotine and flavours **are not** drivers of ONP in vitro cytotoxicity
3. Differences in cytotoxicity between ONP SKUs appear to be due to osmotic stress
4. Use of Contemporary Tox supports a lower genotoxicity profile associated with ONP as compared to snus

COMPARATIVE SUMMARY



ONPs tested
contain **no tobacco**

Creates a **simpler
matrix than snus**

NO TOBACCO



None of the ONPs
showed more *in vitro*
toxicity than Snus
Data suggests **nicotine**
and **flavours** are **not**
drivers of *in vitro*
cytotoxicity

NO COMBUSTION



Fewer analytes
quantified in ONPs
compared to Snus

**In most cases
ONPs contained
>90% lower levels
than snus**

NO SMOKE

NO TAR

THE SWEDISH EXPERIENCE



* Age-Standardized Rate (ASR) per 100,000 in 2022 for lip, oral cavity, trachea, bronchus and lung cancer, dataset inc both sexes



5.4%

-35%

3x

3.5M

Smoking prevalence in Sweden is approaching the **WHO's definition of a non-smoking nation** ($\leq 5\%$)

Statistics Sweden, ages 16 - 84 years. Folkhalsomyndigheten, Tobacco and nicotine use (self-reported) by age, sex and year. Percentage. (Accessed: 29 July 2024)

Swedish mortality rate* (21 per 100,000) is **35% lower than the EU average** (32.8 per 100,000))

WHO & IARC. Available at: <https://gco.iarc.who.int/today/en> (Accessed: 04APR2025)

Swedish epidemiological data shows switching from cigarette smoking to Snus use are at **3x lower risk** for oral cancer

Schildt EB, et al. 1998. Oral snuff, smoking habits and alcohol consumption in relation to oral cancer in a Swedish case-control study. Int. J. Cancer 77, 341-346.

Estimated that if Swedish tobacco-related mortality rates could be applied in other countries, **more than 3.5M lives could be saved** in the EU over the next 10 years

www.smokefreesweden.org (Report: SAVING LIVES LIKE SWEDEN 02082023 WEB & Report: The Swedish Experience EN)

THANK YOU FOR YOUR TIME



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