THE SCIENCE OF SOMETHING BETTER

When somebody smokes, they inhale thousands of chemicals. Around a hundred, referred to as Harmful and Potentially Harmful Chemicals (HPHCs), have been classified by public health experts as causes or potential causes of smoking-related disease

Our goal is to offer adult smokers a range of satisfying products that provide a reduced-harm alternative

Our latest wave of pre-clinical research continues to suggest that *my*blu vapes have the potential to do just that

THE RESEARCH

*my*blu[1] underwent four pre-clinical tests with the results[2] published in a peer reviewed journal

Alongside our existing clinical studies, they strongly indicate *my*blu's harm reduction potential compared to continued smoking

WHAT DID WE FIND?

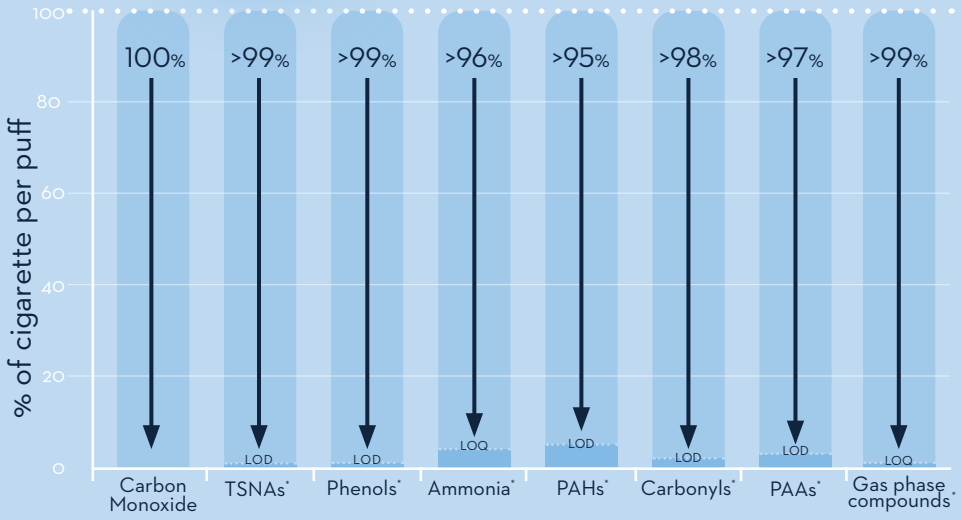
*my*blu vapour...

- Is chemically simple compared to cigarette smoke
- Demonstrates drastic reductions in the levels of toxicants compared to those in cigarettes
- Shows substantially less toxicity in vitro compared to cigarettes due to much fewer harmful chemicals in its composition

99%

Many of the harmful chemicals in cigarette smoke were reduced by 99% in *my*blu vapour*

- As well as a >99%* total reduction[3] in 20 HPHCs identified by the US Food and Drugs Administration (FDA)
- This drastic drop in toxicants was because none were present in levels high enough to be measured*
- Of all the analytes, only water, nicotine and e-liquid aerosol droplets (ACM**) were found in observable levels



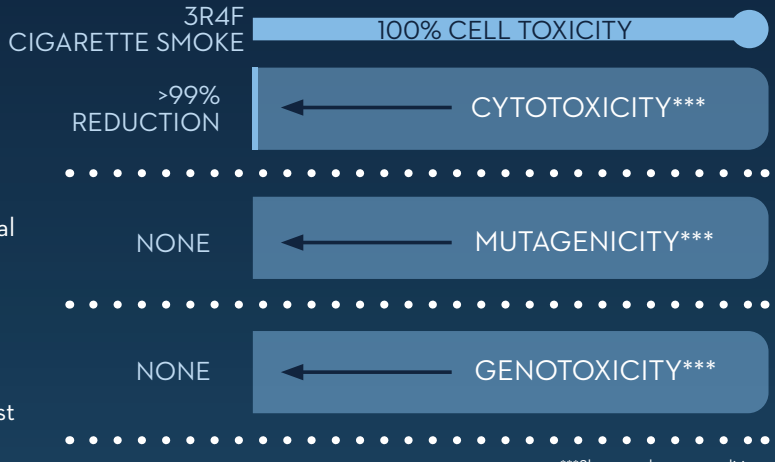
*Where a chemical was not quantifiable the limit of quantification (LOQ) or limit of detection (LOD) was used as a worst case scenario. To enable the % difference between *my* blu vapour and cigarette smoke to be calculated for each toxicant subset/class, when the value for the chemical was <LOQ or <LOD, the LOQ or LOD was used as a reference
**Aerosol Collected Mass (ACM) composed of liquid droplets containing nicotine, propylene glycol (PG) and glycerol, recognised impurities in Pharmacopoeia-quality nicotine and eight thermal decomposition products of propylene glycol or glycerol

*my*blu: less toxicants = reduced cell toxicity

Three recognised regulatory methods then tested the **cytotoxicity, mutagenicity** and **genotoxicity** of both *my*blu vapour and cigarettes

These three processes can cause problems in a biological system. That's why we test for these toxicities as part of the Biological component in our Scientific Assessment Framework

As well as a **99% reduction in cytotoxicity**, *my*blu vapour demonstrated **no genotoxicity or mutagenicity** under test conditions – with results comparable to the air control[4]



***Shown under test conditions

Cytotoxic = Causes cell damage and inhibits cell growth
Mutagenic = Results in DNA mutation above a normal level
Genotoxic = Causes genetic damage

OUR FINDINGS

- *my*blu vapour contains up to 99%[3] fewer harmful chemicals than cigarette smoke, resulting in dramatic reductions in cell toxicity – up to 99% in terms of cytotoxicity[5]
- These results help pave way for further pre-clinical studies, giving the confidence to move forward to clinical assessment with adult smokers

Crucially, this research continues to build our belief that **blu offers a potentially less harmful alternative for adults who would otherwise continue to smoke**

THE "VAPE DEBATE"

An increasing body of science supports vaping's dramatic tobacco harm reduction (THR) potential

Vapes, alongside other NGPs, can potentially play a significant role in global public health strategies

To succeed, these products must be supported by appropriate legislative frameworks

Growing numbers of regulators, public health agencies and advocates agree[6]

WE URGE THE WORLD'S MEDIA, PUBLIC HEALTH BODIES AND REGULATORS WHO ARE STILL UNCONVINCED, TO CONSIDER THE EVER-GROWING BODY OF SCIENTIFIC EVIDENCE SUBSTANTIATING NGPS

Read more at www.imperialbrandsscience.com

1 - 1.6% nicotine tobacco flavour
2 - Rudd, K et al. (2020) Chemical Composition and In Vitro Toxicity Profile of a Pod-Based E-Cigarette Aerosol Compared to Cigarette Smoke Applied In Vitro Toxicology 6 (1)
3 - Measured on a per puff basis from: FDA Abbreviated List of 20 HPHCs for Cigarette Smoke, Guidance for Industry and FDA Staff. In: "Harmful and Potentially Harmful Constituents" in Tobacco Products as Used in Section 904(e) of the Federal Food, Drug, and Cosmetic Act, 2011 www.fda.gov/media/80109/download.
4 - Air control refers to a standard test comparator exposed only to ambient air
5 - Under test conditions
6- UK Science and Technology Select Committee, Public Health England, ASH New Zealand, Cancer Research, Royal College of Physicians

IMPERIAL BRANDS SCIENCE