Biomarker of Exposure Reductions Upon Switching for 5 Days from Cigarettes to a Carbon Heated Tobacco Product (CHTP 1.0)

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Intro

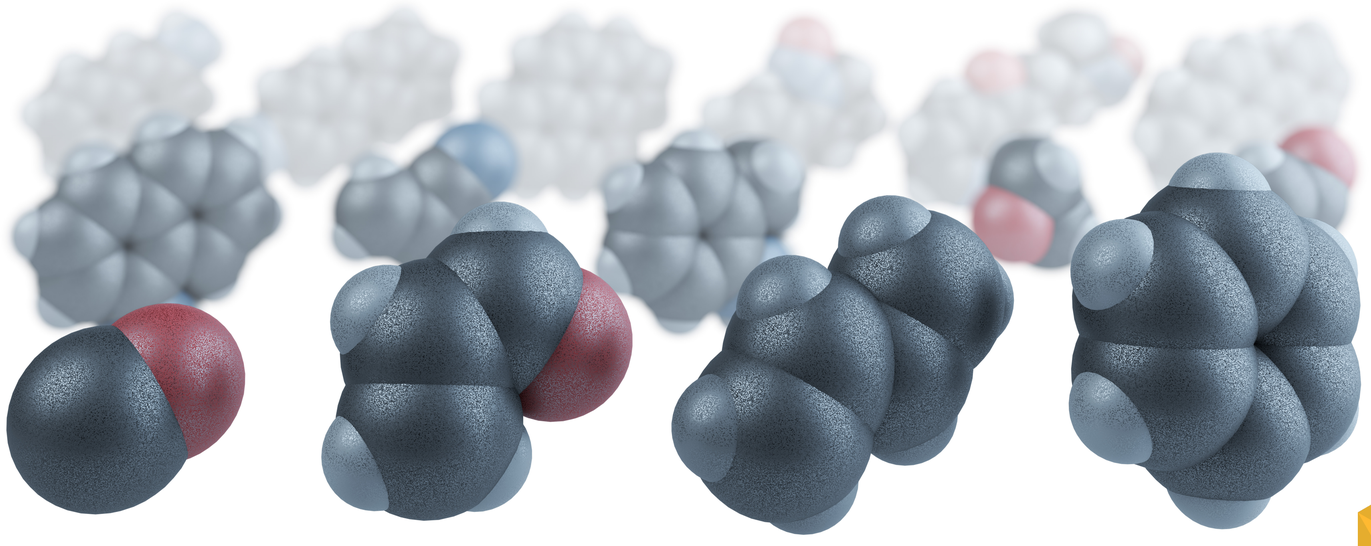
The Carbon Heated Tobacco Product (CHTP 1.0) is designed to heat tobacco without burning it in order to reduce formation of, and consequently exposure to, harmful and potentially harmful constituents (HPHC) as compared to cigarettes while replicating the ritual, taste, sensory characteristics and nicotine uptake of cigarette smoking. The main objective of this study was to demonstrate the reduction of biomarkers of exposure (BoExp) to selected HPHCs in smokers switching from cigarettes to CHTP 1.0 as compared to smokers continuing to smoke cigarettes for 5 consecutive days. Among other assessments the nicotine uptake and subjective effects of CHTP 1.0 use were evaluated in this study.

80 healthy adult smokers (age of 21+) were randomly assigned to two groups and asked to: (1) switch from cigarettes to CHTP 1.0 (41 participants) or (2) continue to use their own non-menthol cigarettes (39 participants). Participants were eligible if they smoked ≥ 10 commercially available non-menthol cigarettes per day for the last 6 weeks prior admission and had smoked cigarettes for ≥ 3 consecutive years before enrollment and were not planning to quit smoking in coming 3 months.

1. CHTP 1.0 is a heat-not-burn product that does not involve tobacco combustion
2. The product generates a nicotine-containing aerosol which has significantly lower levels of HPHCs than cigarettes
3. CHTP 1.0 has been designed to resemble a cigarette as closely as possible

Selected Harmful or Potentially Harmful Constituents (HPHC) of tobacco smoke

15 HPHCs IN SMOKE



Carbon Monoxide · Acrolein · 1,3-Butadiene · Benzene

Augmented reality

CHTP 1.0

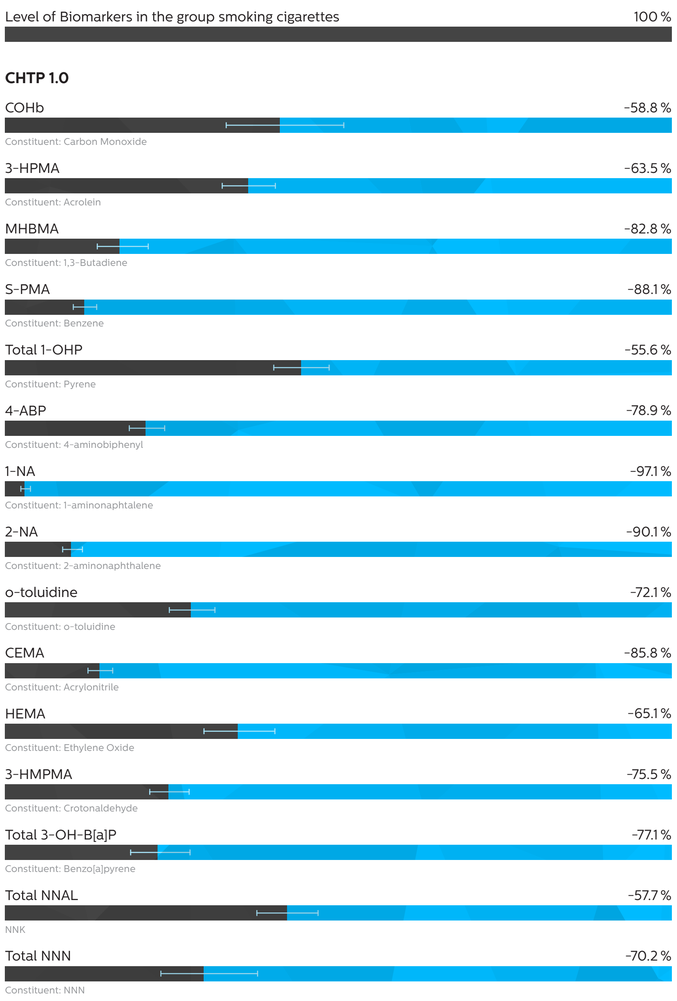
Nicotine

Exposure to HPHCs was assessed by measuring the level of corresponding BoExp in urine and plasma. BoExp can be described as substances measured in human body as a result of ingestion of another substance

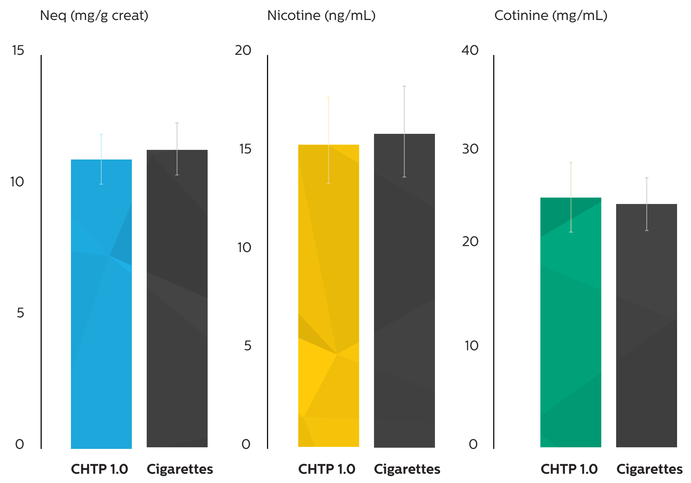
Results

REDUCTION IN HPHCs EXPOSURE: CHTP 1.0 VS CIGARETTES (DAY 5)

Day 5 levels were reduced, relative to cigarettes, by 58.8% to 88.1% in primary biomarkers COHb, MHBMA, 3-HPMA and SPMA. Other biomarkers were reduced by 55.6% to 97.1%. For more information see the brochure.

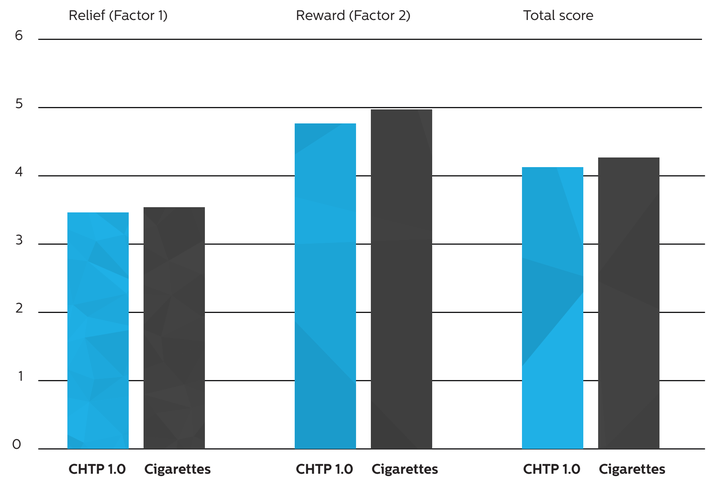


NICOTINE UPTAKE



1. NEQ level was 3.0% lower for the CHTP 1.0 group compared to the cigarette group over all time points.
2. On day 5, plasma nicotine and cotinine levels were respectively 3.0% lower and 2.6% higher in CHTP 1.0 group than in the cigarette group.

SUBJECTIVE EFFECTS



1. Cigarette and CHTP 1.0 users scored the products similarly in the urge-to-smoke assessment questionnaire of relief, reward and total scores.
2. The scoring scales of CHTP 1.0 were close to those of cigarettes over the whole study period.

Conclusions

At the end of the 5 day exposure period biomarkers of exposure to HPHCs were markedly reduced upon switching to CHTP 1.0 use, whereas nicotine levels were similar to cigarette smoking.

Smoking urge questionnaire scores indicate similar responses for CHTP 1.0 as for CC, which is encouraging for CHTP adoption as an alternative to CC.

The study was registered at ClinicalTrials.gov (ID: NCT02503254)

For the competing financial interest see the supplementary brochure

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