1. No.
   2023G026

2. Title
   Qualitative and Quantitative Analysis of Flavors Released From Heated Tobacco Products

3. Period
   2023-2025

4. Summary

This study aimed to evaluate the health risks associated with chemical substances in heated tobacco products (HTPs) by conducting qualitative and quantitative analyses of flavor compounds in mainstream aerosols and investigating their pollution levels in indoor environments. First, flavor compounds in tobacco leaves and mainstream aerosols were analyzed for 26 products manufactured by Philip Morris Japan and Japan Tobacco. The results showed that the concentrations of flavor compounds in mainstream aerosols depended on heating temperature and manufacturer, and capsule products tended to contain relatively higher levels of flavor compounds. In addition, the minimum margin of exposure (MOE) for (R)-(+)-limonene was 89, suggesting a potential non-carcinogenic risk from inhalation exposure to this compound. Furthermore, concentrations of nicotine, aldehydes, nitrate, nitrite, and metals (Cr, Cu, Cd, and Pb) in air were measured at restaurants and smoking areas. These compounds were detected, and the indoor-to-outdoor concentration ratios (I/O ratios) exceeded 1 at most sites, indicating that sidestream smoke and exhaled smoke generated during smoking were likely the primary emission sources. These findings suggest that the use of HTPs may cause inhalation exposure to flavor compounds and contribute to indoor air pollution, highlighting the importance of comprehensive risk assessments that include both flavor compounds and inorganic constituents.