

ASSESSING THE POTENTIAL OF LOBELIA PLANT EXTRACT AS A NATURAL NICOTINE SUBSTITUTE FOR VAPE JUICE FORMULATION

ABSTRACT

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This study explores the potential of Lobelia plant extract as a natural nicotine substitute in vape juice formulations. Historical use of Lobelia in respiratory therapies and the structural similarity of its active compound, lobeline, to nicotine suggest possible applications in harm-reduction products. Concerns regarding chemical stability, toxicity at high doses, and variable pharmacological effects warrant an investigation of its suitability for vaping applications. This study employs a quantitative design with purposive sampling of five chemical engineers and five toxicologists. A four-part survey instrument captures respondents' demographic profiles, assesses acceptability across five parameters (ingredients, chemical stability, vapor quality, formulation process, and safety), and gathers feedback on challenges and suggested improvements. Vape juice is formulated by infusing Lobelia powder into propylene glycol, filtering, and blending with vegetable glycerin. Data are analyzed using frequency distributions, weighted means, independent t-tests, and one-way ANOVA. Respondents rated the Lobelia vape juice formulation as moderately acceptable (overall mean = 2.70 on a 4-point scale), with toxicologists (mean = 2.88) showing higher acceptance than chemical engineers (mean = 2.53). All five assessment categories achieved acceptability, although vapor quality received the lowest score (mean = 2.50). Statistical analysis indicated no significant difference between professional groups ($t = 1.366$, $p > 0.05$). Reported challenges included flavor inconsistency, formulation instability, and variable extract potency, leading to recommendations for improved stabilization techniques and flavor enhancement. The findings indicated that Lobelia extract has moderate potential as a nicotine substitute for vape juice, particularly for users seeking plant-based alternatives. However, stability issues, lack of standardization, and suboptimal user experience limited overall acceptability. As a result, future work should focus on optimizing extraction methods, incorporating stabilizers, and refining flavor profiles. This study contributes to the emerging discourse on plant-based alternatives in vaping and smoking cessation strategies, highlighting areas for further research and development.

RECOMMENDED CITATION

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