

## ABSTRACT

Tobacco leaf essential oil was a significant source of additives in fragrance manufacturing. This research investigates the extraction of essential oil from tobacco leaves (*N. tabacum*) of the Burley and Virginia types using hydro-distillation method due to chemicals-free, no contamination, and can be extracted in large quantities. The chemical composition of the extracted oil was analyzed using Gas Chromatography–Mass Spectrometry (GC–MS), while the chemical partial-identity was studied with Attenuated Total Reflectance Fourier Transform Infrared Spectroscopy (ATR–FTIR). The results showed that the essential oil extraction yield from Virginia was 0.0825%, while Burley yielded 0.0422%. Chemical composition analysis revealed 16 compounds were found in Virginia oil, accounting for 88.83% of the total peak area and 15 compounds were found in Burley oil, accounting for 86.69% of the total peak area. This analysis was based on a similarity index of greater than or equal to 85% compared to the Wiley W9N11 database. Moreover, the major component in both essential oils was Neophytadiene. The chemical identity study of the essential oils indicated that the spectra of both essential oils exhibited similar characteristics.

## INTRODUCTION

Tobacco (*Nicotiana tabacum* L.) is an economic crop in Thailand, mainly used for cigarette production, though chemicals from the smoke are dangerous and harmful. Beyond smoking, tobacco contains aromatic compounds used in cosmetics, perfumes, and aromatherapy, with biological benefits; anti-inflammatory, anti-oxidation and antimicrobial properties. Essential oil is typically extracted from dried leaves. However, this research focus on utilizing tobacco waste as a source for extraction which could add value and reduce agricultural waste.

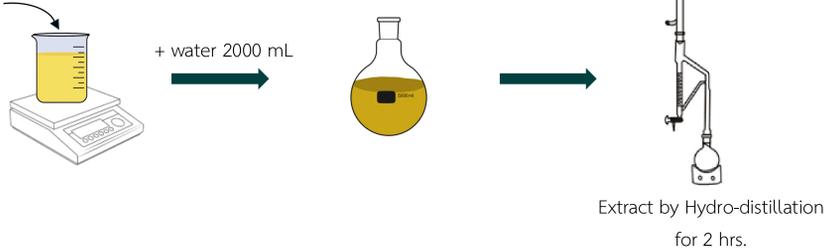
## OBJECTIVES

1. To extract essential oils from tobacco leaves (*N. tabacum*) types Burley and Virginia by hydro-distillation method.
2. To analyze chemical components in both essential oils.
3. To utilize the obtained essential oils for producing perfume.

## METHODOLOGY

### Preparation of Essential oil

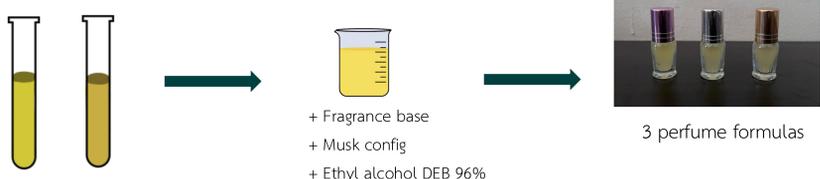
Discarded Tobacco 150.00 g



### GC-MS Analysis and ATR-FTIR IDENTIFICATION



### PERFUME FORMULATION



## RESULTS AND DISCUSSION

### EXTRACTION



Figure 1 (a) essential oil from Virginia tobacco and (b) essential oil from Burley tobacco.

### GC-MS ANALYSIS

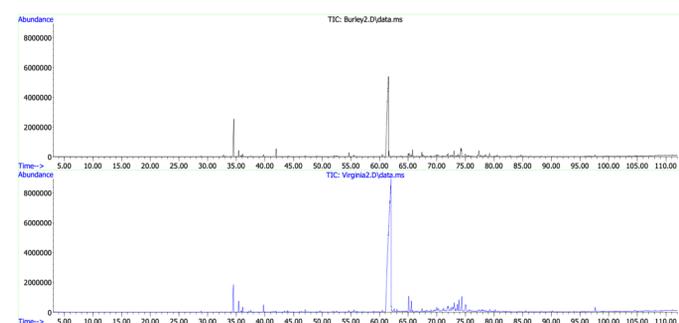


Figure 2 GC–MS Chromatography comparison of essential oils from tobacco types Burley (a) and Virginia (b)

### ATR-FTIR IDENTIFICATION

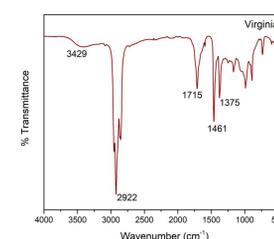


Figure 3 FT-IR Spectrum of essential oils from tobacco types Virginia.

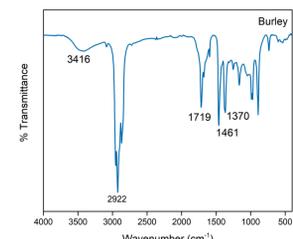


Figure 4 FT-IR Spectrum of essential oils from tobacco types Burley.

### PERFUME TESTING

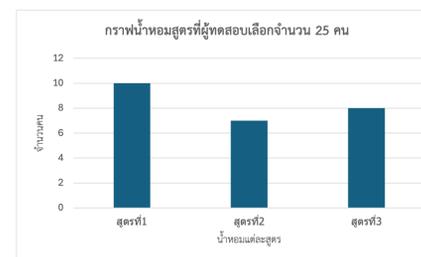


Figure 5 comparison graph of Perfume Testing.

Table 1 Perfume formulation.

	Perfume Formula			
	Fragrance base (%)	Essential oils (%)	Musk Config (%)	Ethyl alcohol DEB 96% (%)
Formula 1	20.25	Burley (6.75)	3	70
Formula 2	20.25	Virginia (6.75)	3	70
Formula 3	20.25	Burley:Virginia (3.375:3.375)	3	70

## ACKNOWLEDGEMENT

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## REFERENCES

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- [2] Jokić, S., Gagić, T., Knez, Ž., Banožić, M., & Škerget, M. Separation of active compounds from tobacco waste using subcritical water extraction. *The Journal of Supercritical Fluids*, 2019: 104593.

## CONCLUSION

1. The essential oil extraction yield from Virginia type was 0.0825%, while from Burley type was 0.0422%.
2. The essential oil from Virginia type contained 16 compounds, with Neophytadiene, (E)-Solonone, and Farnesyl acetone C being the top three major components.
3. The essential oil from Burley type contained 15 compounds, with Neophytadiene, (E)-Solonone, and Phytol as the top three components.
4. Both tobacco varieties shared 8 identical compounds in their essential oil profiles.
5. The FT-IR spectra of both essential oils exhibited similar characteristics.
6. From customer satisfaction survey (n = 25), the order of satisfaction was Formula 1 > Formula 3 > Formula 2, respectively.