

OPTIMIZATION OF LIP BALM FORMULA WITH PINEAPPLE PEEL (*Ananas comosus* L. Merr), CARROT PEEL (*Daucus carota* L.), AND VIRGIN COCONUT OIL (VCO)

Dyani Primasari Sukamdi^{1*}, Cut Intan Ayu Nurjanah², Sabtanti Harimurti³, Annisa Krisridwany⁴, Azura Amid⁵

¹²³⁴ Department of Pharmacy, Faculty of Medical and Health Sciences, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia
⁵ International Islamic University Malaysia, Jalan Gombak, 53100 Kuala Lumpur Malaysia
dyani.primasaris@umy.ac.id

01 BACKGROUND



UV light
can damage lip keratin cells (Setiawan et al, 2022)



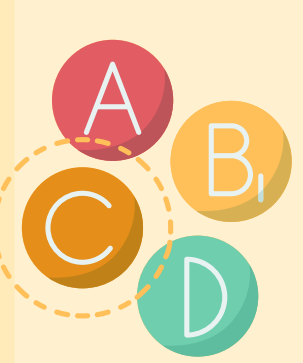
Lips become **dry and chapped**



Lip Balm
Can be used to **treat lip problems**



Lip Balm can be made from **natural ingredient** (Kokil et al, 2025). For example, it can be made from **Pineapple Peel, Carrot Peel and VCO**

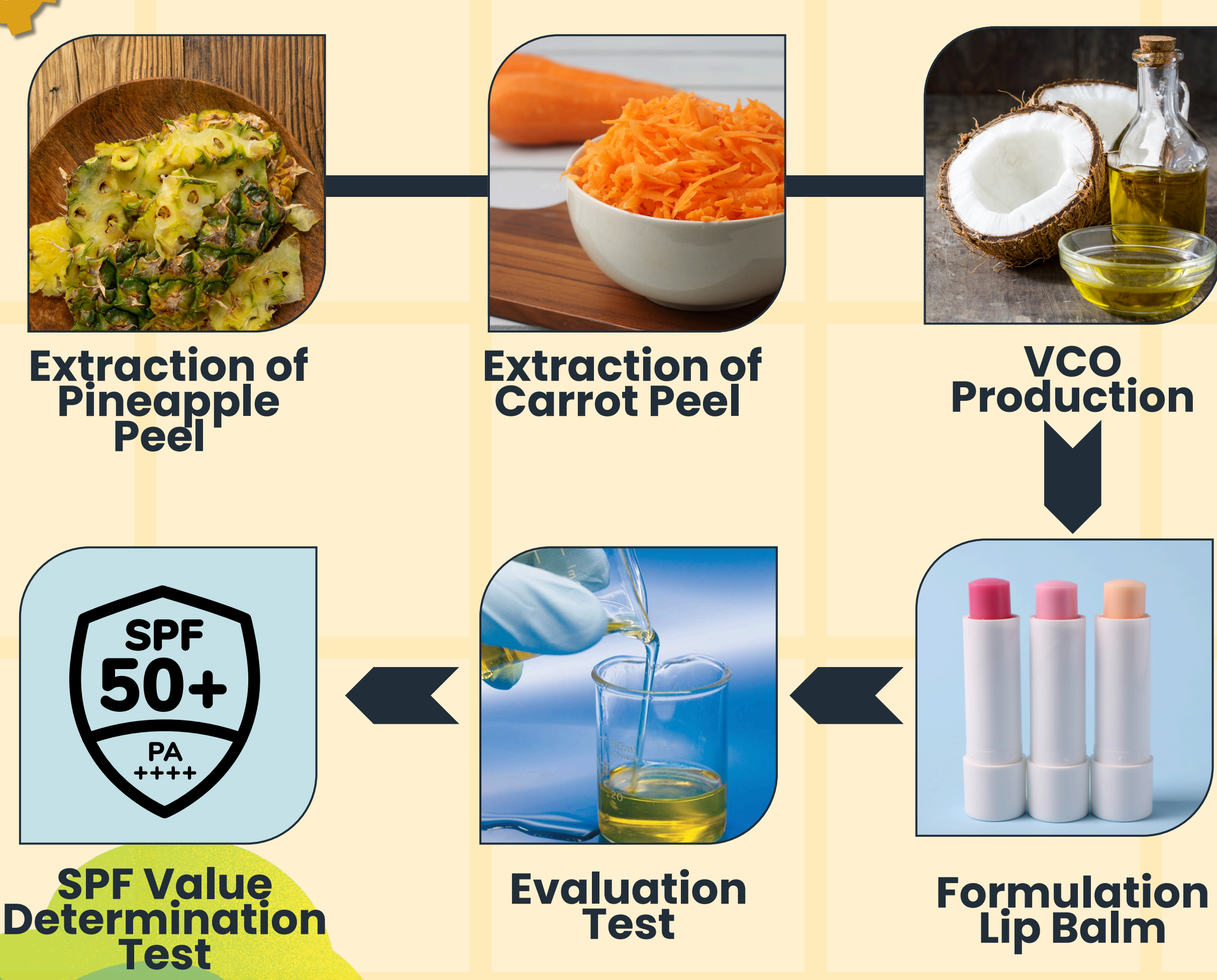


Pineapple Peel contains **flavonoids and tannins**
Carrot Peel contains the **antioxidant, β-Carotene and Vitamin E**

02 PURPOSE

- Knowing the content of secondary metabolites
- Knowing the optimal formulation of lip balm preparations
- Knowing the stability of lip balm preparations
- Know the SPF value of Pineapple Peel and Carrot Peel extract

03 METHOD



04 LIP BALM FORMULA

Materials	Concentration (gr)				Function
	F0	F1	F2	F3	
Pineapple peel extract	0	10%	0	10%	Active ingredients
Carrot peel extract	0	0	10%	10%	Active ingredients
Glycerin	5	5	5	5	Humectant
Cera flava	12	12	12	12	Stiffening agent
Nipasol	0.02	0.02	0.02	0.02	Preservative
Nipagin	0.18	0.18	0.18	0.18	Preservative
VCO	50	50	50	50	Emollient
Oleum cacao	Add 100	Add 100	Add 100	Add 100	Bassis

This study used a **modified lip balm formula** (Setiawan et al, 2022)

06 CONCLUSION

The results of the physical evaluation of lip balm :

- Formula 3 is the optimal formula for pineapple peel and carrot peel extract lip balm preparations.
- The use of pineapple peel and carrot peel extract in lip balm preparations affects the SPF value of the preparation. The SPF value of F0 is 1.03, the SPF value of F1 is 8.80, the SPF value of F2 is 8.95, and the SPF value of F3 is 25,67.

05 RESULT

Phytochemical Screening Result

Extract	Phytochemical Screening	Reagent	Result
Pineapple Peel Extract	Flavonoid	NaOH	(+)
	Alkaloid	Mayer	(-)
	Tanin	FeCl3	(+)
	Saponin	Aquadest	(+)
Carrot Peel Extract	Flavonoid	NaOH	(+)
	Alkaloid	Mayer	(-)
	Tanin	FeCl3	(+)
	Saponin	Aquadest	(+)

The results of the **phytochemical screening of pineapple peel and carrot peel extracts were positive for containing flavonoids, tannins and saponins**

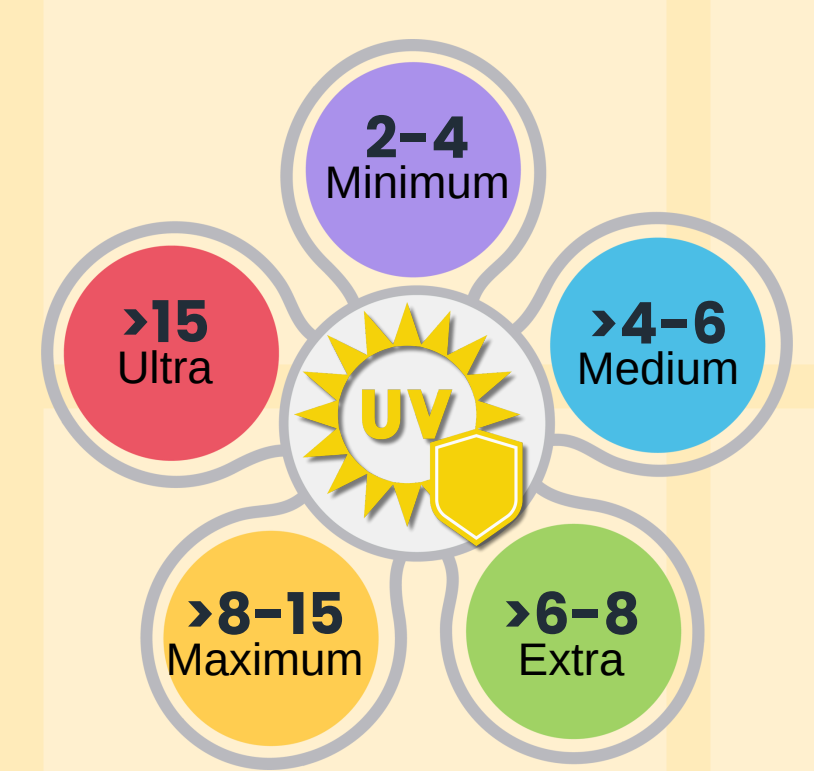
Physical Evaluation Result of Lip Balm

Formula	Color	Odor	Texture	Homogeneity	Melting Temperature	PH
F0	White	The distinctive aroma of olcum cacao	Semi solid	Homogenous	55°C	5
F1	a Little Brown	Typical pineapple aroma	Semi solid	Homogenous	55°C	5
F2	Light Brown	Typical carrot aroma	Semi solid	Homogenous	55°C	5
F3	Dark Brown	The distinctive aroma is a combination of pineapple and carrot	Semi solid	Homogenous	55°C	5

Stability Test Result of Lip Balm

Formula	Color	Odor	Texture	Homogeneity	Melting Temperature	PH
F0	White	The distinctive aroma of olcum cacao	Semi solid	Homogenous	53°C	5
F1	a Little Brown	Typical pineapple aroma	Semi solid	Homogenous	53°C	5
F2	Light Brown	Typical carrot aroma	Semi solid	Homogenous	53°C	5
F3	Dark Brown	The distinctive aroma is a combination of pineapple and carrot	Semi solid	Homogenous	53°C	5

SPF Value and Protection



SPF Value Test Result

Materials	Formula			
	F0	F1	F2	F3
I	1.030	8.791	8.948	25.658
II	1.027	8.790	8.952	25.666
III	1.027	8.791	8.947	25.693
Average	1.028	8.791	8.949	25.672