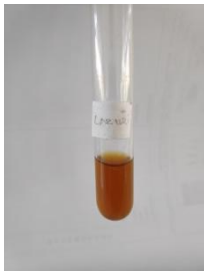
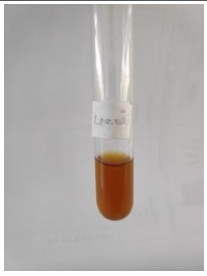
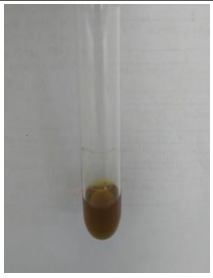
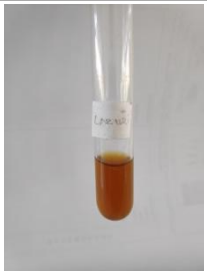
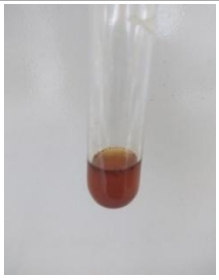
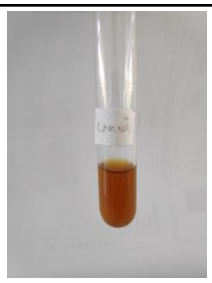
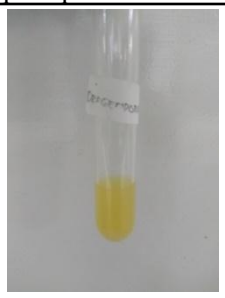
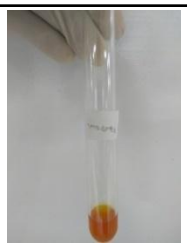
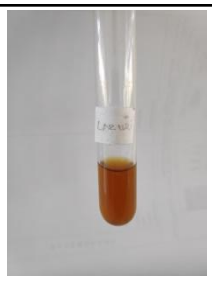
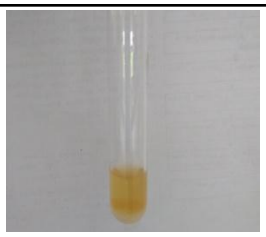
Supplementary

Phytochemical Screening Results

No.	Type of Chemical Constituent	Reagent	Before	After	Conclusion
1	Saponins	HCl		 Stable foam formed	Saponins present
2	Phenolics	$FeCl_3$		 Blackish-blue color formed	Phenolics present
3	Steroids	Liebermann–Burchard reagent		 Bluish-green color formed	Steroids absent
4	Terpenoids	Liebermann–Burchard reagent		 Brown ring formed	Terpenoids present

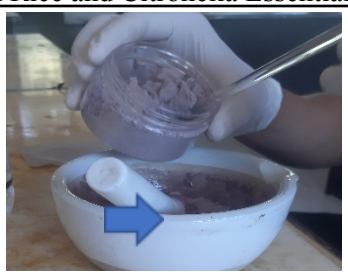
5	Alkaloids	Mayer		 White precipitate formed	Alkaloids present
		Bouchardat		 No brownish-black precipitate formed	
		Dragendorff		 Orange precipitate formed	
		Wagner		 No precipitate formed	
6	Flavonoids	Oxalic acid–boric acid reagent; UV fluorescence at 366 nm		Yellow fluorescence observed (UV 366 nm)	Positive for flavonoids

7	Tannins	10% lead(II) acetate		 White precipitate formed	Positive for tannins

Preparation of Black Rice and Citronella Essential Oil Mask Formulations

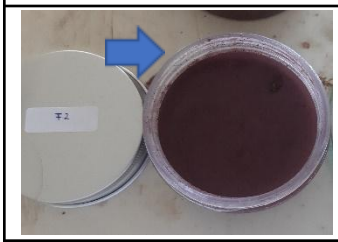












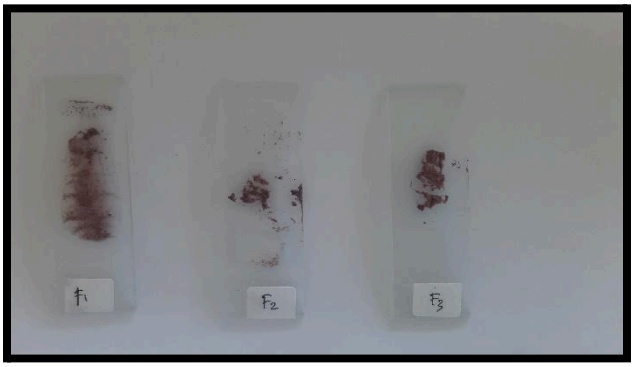


Quality Evaluation of the Mask

Organoleptic Test Results

Formulation	Consistency	Color	Odor
F1	Liquid	Light purple 	Characteristic citronella oil odor with a slightly sour note
F2	Moderately viscous	Light purple 	Characteristic odor of citronella oil and black rice
F3	Viscous	Dark purple 	Characteristic odor of citronella oil and black rice

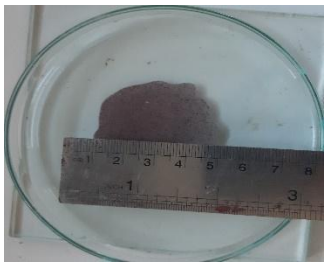
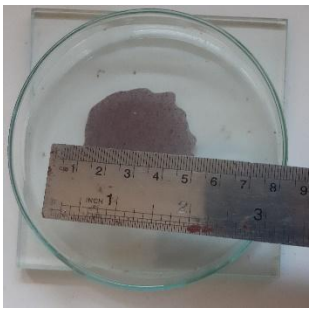
Homogeneity Test Results



Mask Stability Test Results

Formulation	pH
F1	
F2	
F3	

Mask Spreadability Test Results

Formulation	Spreadability
F1	
F2	
F3	

Microbial Resistance Test Results

No.	Treatment	Replicate						
		R1	R2	R3	R4	R5	R6	R7
	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	F2	36.07	38.08	35.11	35.95	37.02	37.85	34.06
	F3	14.67	17.32	17.42	32.42	15.11	17.09	16.26
	C+	25.10	24.80	25.50	26.00	24.50	25.20	25.80
	C−	0.0	0.0	0.0	0.0	0.0	0.0	0.0

In Vivo Test Results

Replicate	Measurement	F1	F2	F3	C+	C−
R1	D1 (mm)	0.00	36.00	15.14	24.90	0.00
	D2 (mm)	0.00	36.15	14.20	25.30	0.00
	Total (mm)	**0.00**	**36.07**	**14.67**	**25.10**	0.00
	Net (mm)	**0.00**	**30.07**	**8.67**	**19.10**	**0.00**
R2	D1 (mm)	0.00	38.02	17.20	24.60	0.00
	D2 (mm)	0.00	38.14	17.54	25.00	0.00
	Total (mm)	0.00	38.08	17.32	**24.80**	0.00
	Net (mm)	**0.00**	**32.08**	**11.37**	**18.80**	**0.00**
R3	D1 (mm)	0.00	34.99	17.24	25.30	0.00
	D2 (mm)	0.00	35.24	17.60	25.70	0.00
	Total (mm)	0.00	35.11	17.42	**25.50**	0.00
	Net (mm)	0.00	29.11	11.42	**19.50**	0.00
R4	D1 (mm)	0.00	35.76	16.10	25.80	0.00
	D2 (mm)	0.00	36.15	16.32	26.20	0.00
	Total (mm)	0.00	35.95	32.42	**26.00**	0.00
	Net (mm)	**0.00**	**29.95**	**26.42**	**20.00**	**0.00**
R5	D1 (mm)	0.00	36.89	15.10	24.30	0.00
	D2 (mm)	0.00	37.15	15.12	24.70	0.00
	Total (mm)	0.00	37.02	15.11	**24.50**	0.00
	Net (mm)	**0.00**	**31.02**	**9.11**	**18.50**	**0.00**
R6	D1 (mm)	0.00	37.59	17.04	25.00	0.00
	D2 (mm)	0.00	38.11	17.14	25.40	0.00
	Total (mm)	0.00	37.85	17.09	**25.20**	0.00
	Net (mm)	**0.00**	**31.85**	**11.09**	**19.20**	**0.00**
R7	D1 (mm)	0.00	33.99	**16.20**	25.60	0.00
	D2 (mm)	0.00	34.14	**16.33**	26.00	0.00
	Total (mm)	0.00	34.06	16.26	**25.80**	0.00
	Net (mm)	**0.00**	**28.06**	**10.26**	**19.80**	**0.00**

Detailed raw data from seven replicates

Measurements of horizontal diameter (D1), vertical diameter (D2), total diameter, and net clear zone diameter (obtained by subtracting the 6.00 mm well diameter)

- Total diameter formula: $D_{total} = 2D1 + D2$
- Net clear zone formula: $D_{net} = D_{total} - 6.00\ mm$

Data Summary (Mean ± Standard Deviation)

- F1 (Black Rice): 0.00 mm ± 0.00 *(No response/Resistant)*
- F2 (Citronella Essential Oil): **36.21 mm ±** *(Inhibition category: Strong)*
- F3 (Mask Formulation): **18.26 mm ±** *(Inhibition category: Strong)*
- Positive control (clindamycin): **25.27 mm ±** *(Inhibition category: Very strong)*
- Negative control (sterile distilled water): 0.00 mm ± 0.00 *(No response)*

Additional Notes:

- Activity difference between F2 and F3: The smaller inhibition zone diameter of F3 relative to F2 is generally expected and is attributable to dilution of the active constituents when the essential oil is incorporated into the mask base.
- Inhibition Zone Categories (Davis & Stout):
  - Weak (≤5 mm)
  - Moderate (5–10 mm)
  - Strong (10–20 mm)
  - Very strong (≥20 mm)