

FIGHTING CANCER? PALMITIC ACID LIKE A TURTLE, SHIELD LICHEN LIKE A RABBIT



COMPARISON STUDY OF ANTICANCER POTENTIAL FROM SHIELD LICHEN EXTRACT AND PALMITIC ACID THROUGH THE INHIBITION OF ANGIOGENESIS ON CHICK CHORIOALLANTOIC MEMBRANE

Janice Geraldine Chen & Rendi Orvalo Wijaya - Santa Laurenzia High School, Indonesia

BACKGROUND

RADIOTHERAPY

CANCER

CHEMO DRUGS

HAND-FOOT SYNDROME

PULMONARY HEMORRHAGE

SHIELD LICHEN

NATURAL ANTICANCER

ANTIANGIOGENESIS

PALMITIC ACID

CCCCCCCCCCCCCCCC(=O)O

PROBLEM FORMULATION

- How to extract secondary metabolites from shield lichen?
- How is the content of secondary metabolite in shield lichen extract?
- How is the anticancer potential of shield lichen extract, compared to palmitic acid, through the inhibition of angiogenesis, on chick chorioallantoic membrane?

OBJECTIVE

To compare the anticancer potential of shield lichen extract and palmitic acid, through the inhibition of angiogenesis on chick chorioallantoic membrane

RESEARCH METHOD

EXTRACTION

SHIELD LICHEN SIMPLICIA MACERATION EXTRACT

IN OVO ANTIANGIOGENESIS TEST

Injection of lichen extract into the egg

5% 10% 15%

- Shield lichen extract
- Palmitic acid
- Aquadest

INCUBATION

OBSERVATION

BLOOD VESSEL

PHYTOCHEMICAL SCREENING & FTIR

Secondary Metabolite	Reagent
Carboxylic acid	NaHCO ₃
Flavonoid	NaOH
Alkaloid	HCl & Mg
Steroid	Iodine
Triterpenoid	CH ₃ COOH & H ₂ SO ₄
Tannin	H ₂ SO ₄
Saponin	FeCl ₃
	Lead(II) acetate

RESULTS AND ANALYSIS

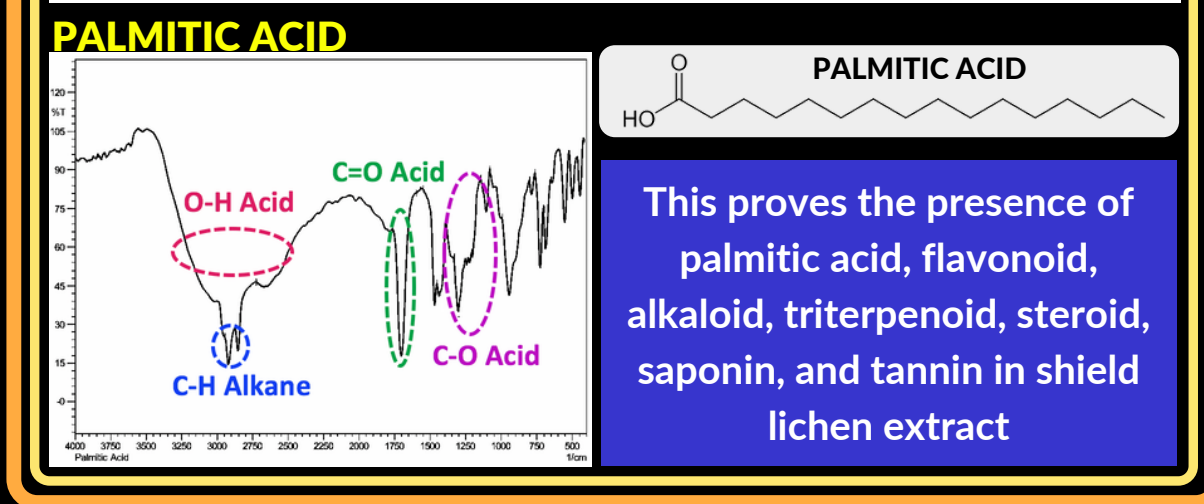
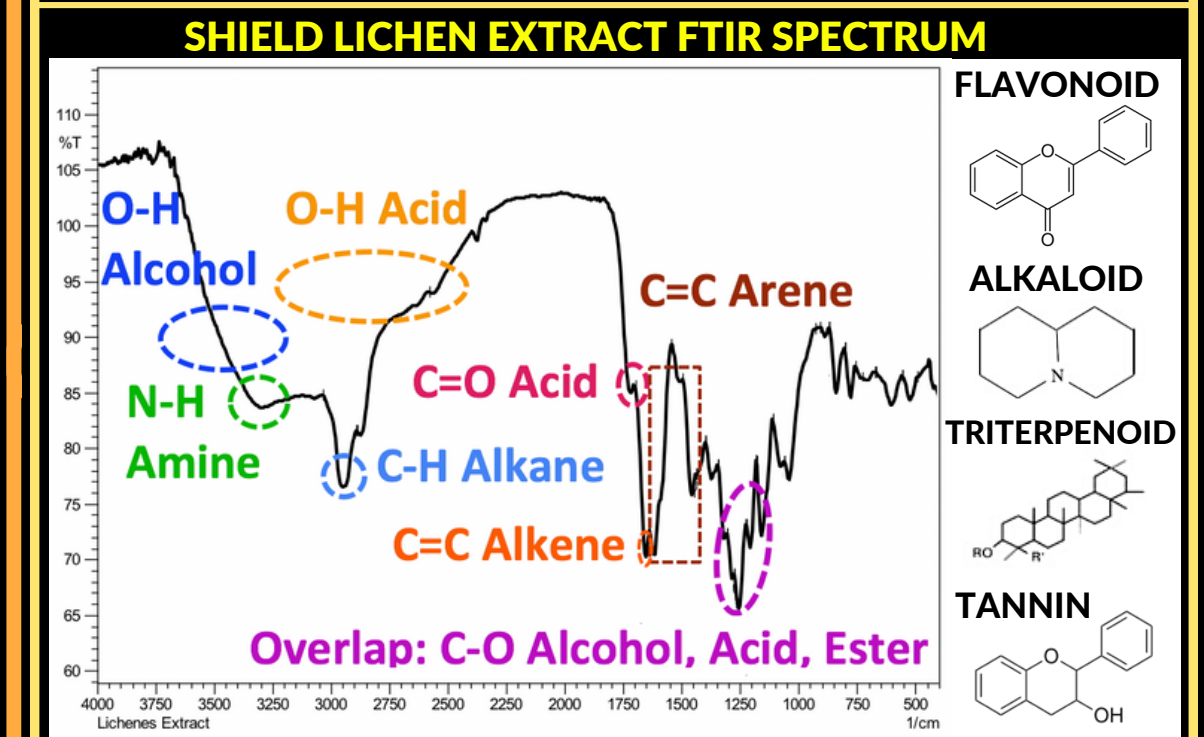
EXTRACT IDENTIFICATION RESULTS

PHYTOCHEMICAL SCREENING RESULTS

	Palmitic Acid	Flavonoid HCl & Mg NaOH	Alkaloid	Steroid	Terpenoid	Tannin	Saponin
BEFORE							
AFTER							
Result	Negative	Positive	Positive	Positive	Positive	Positive	Positive

EXTRACT

This shows the presence of flavonoid, alkaloid, steroid, triterpenoid, tannin, saponin, and carboxylic acid in shield Lichen extract



ANTIANGIOGENESIS TEST RESULTS

1 INCUBATION DAY 6 (NAKED EYES)

		5 %	10 %	15 %
Negative Control				
Shield Lichen Extract		NO GROWTH		
Palmitic acid		NO GROWTH		

2 INCUBATION DAY 7 (NAKED EYES)

		5 %	10 %	15 %
Negative Control				
Shield Lichen Extract		NO GROWTH		
Palmitic acid		NO GROWTH		

No growth in lichen extract and palmitic acid

Signs of growth in 5% palmitic acid concentration

3 INCUBATION DAY 6 (UNDER MICROSCOPE)

		5 %	10 %	15 %
Negative Control				
Shield Lichen Extract		NO GROWTH		
Palmitic acid		NO GROWTH		

4 INCUBATION DAY 7 (UNDER MICROSCOPE)

		5 %	10 %	15 %
Negative Control				
Shield Lichen Extract		NO GROWTH		
Palmitic acid		NO GROWTH		

No growth in lichen extract and palmitic acid

Pale & unbranched blood vessels growth in 5% palmitic acid

CONCLUSION

Angiogenesis inhibition potential of shield lichen extract towards chick chorioallantoic membrane, surpasses palmitic acid at 5% concentration, although they are equivalent at 10% and 15%

FUTURE WORK

Investigate the potential of shield lichen extract as an angiogenesis inhibitor using ex ovo CAM assay

REFERENCES

- <https://www.jcancer.org/v11p4474.htm>
- <https://www.europeanpharmaceuticalreview.com/news/81355/radiotherapy-more-effective/>
- <https://www.health.harvard.edu/heart-health/treatments-for-breast-cancer-may-harm-the-heart>
- <https://www.dreamstime.com/royalty-free-stock-images-pill-caplet-spilled-container-pills-capletspllied-over-orange-image36381769>
- <https://www.wisegeek.com/what-is-a-pulmonary-hemorrhage.htm>
- <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1610-0387.2010.07449.x>
- <https://www.chem.ucla.edu/~harding/IGOC/S/spectrometer.html>
- <https://zdorovaya-eda.com/recepty/nemnogo-o-parmelii>
- <https://www.selleckchem.com/products/palmitic-acid.html>