



Potential of using green solvent to extract crude vitamin E from Crude Palm Oil (CPO)

Presented by

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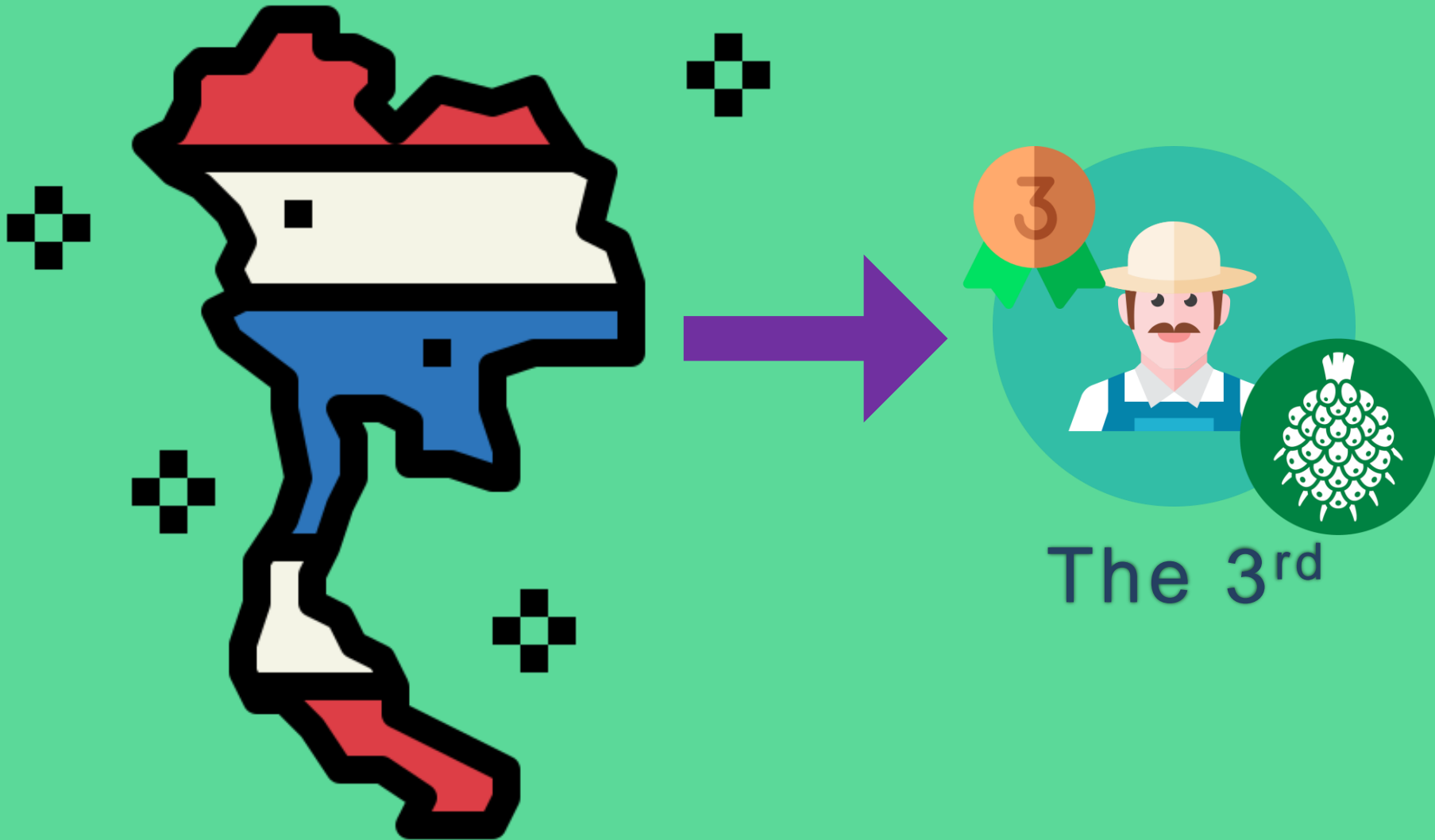
BACKGROUND OF PROJECT



BACKGROUND



- PALM OIL PROBLEM -



The 3rd

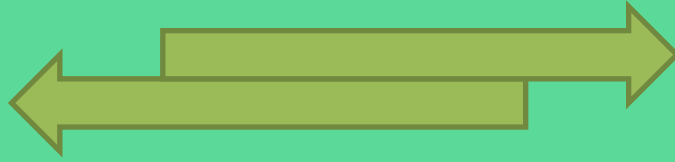
BACKGROUND



- Problem of zero palm oil -



- BEFORE -



core



- AFTER -



BACKGROUND



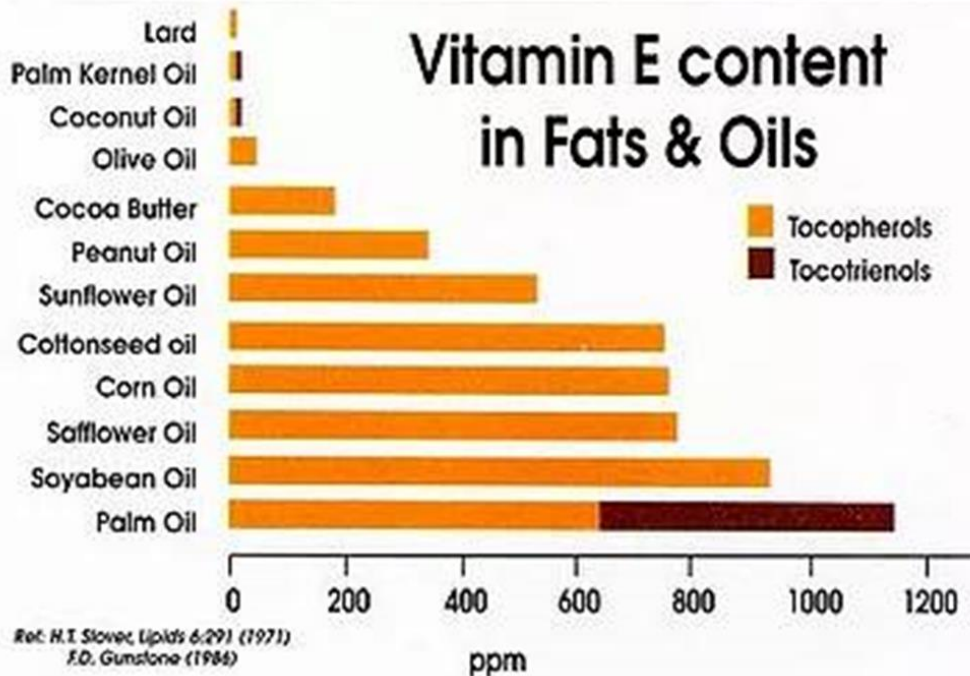
- Crude Palm Oil -



- Extracted from the pulp of fruit of oil palms

- Included tocopherol and tocotrienols (Vitamin E)

- Amount of vitamin E from crude palm oil is 0.6-1.0 mg/ml



--OBJECTIVES--



To study extraction crude vitamin E from crude palm oil by using green solvent

To extract crude vitamin E from crude palm oil

-- EXPECTED BENEFIT --



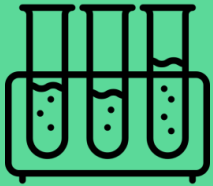
Able to extract Vitamin E from crude palm oil with green solvent

Know the potential of using green solvent to extract crude vitamin E from Crude Palm Oil

-- PROJECT FRAMEWORK--



Prepare Crude Palm Oil from oil palm factory.



using a batch method (Batch Experiment).

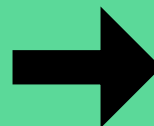
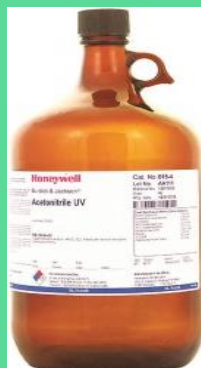


- Use methanol as solvents in the liquid-liquid extraction process
- Use methanol as solvents in the analysis process



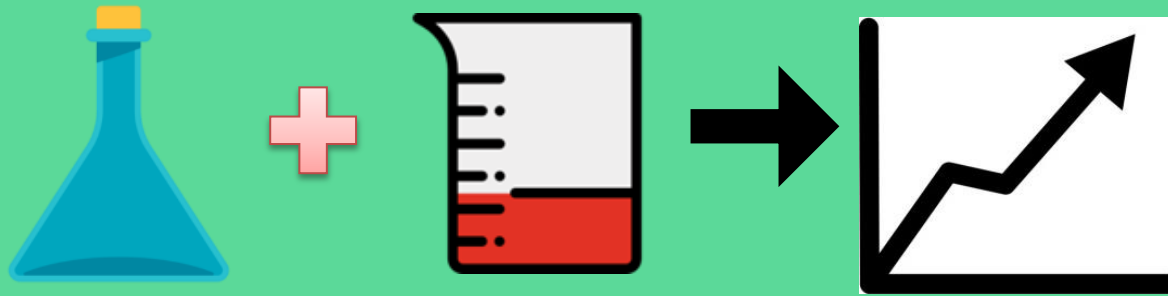
- Using High Performance Liquid Chromatography for analysis vitamin E

METHODOLOGY



Mobile phase was prepared with Methanol and acetonitrile at a ratio of 60: 40.

METHODOLOGY



α -tocopherol standard was prepared and analyzed by HPLC using prepared mobile phase.

METHODOLOGY



Prepare palm oil and ethanol, put it in a test tube and centrifuge at 3000 rpm for 15 minutes.

METHODOLOGY



Put the desired substance in a 1.5 ml syringe and then find the vitamin E by HPLC with the same mobile phase

METHODOLOGY



Prepare palm oil with green solvent

Weighed 5 grams of crude palm oil from Southern Border Development Palm Company Limited and mixed 20 ml of ethanol in a test tube. After that, the test tube was shaken by a centrifuge at a frequency of 3,000 rpm for 90 seconds until two clear liquid stratification was seen, with the upper layer floating ethanol solvent (nonpolar) and the lower layer oil. Palm rich in vitamin E Therefore brought to heat The distilled water was prepared in a 1,000-milliliter, 500-milliliter beaker with the test tubes mentioned above. Until the ethanol in the upper layer has evaporated completely Only downstairs The syringe was sucked and put in 1.5 ml brown vial, which had to go through filtration of 0.45 μm completely.

Performing a mobile phase and preparing α -tocopherol standard

Mobile phase is made from acetonitrile ($\text{C}_2\text{H}_3\text{N}$) and methanol (CH_3OH) ratio 60:40, total volume 500 ml or 250 ml solution for HPLC, flow rate 0.7 ml / min. The wavelength ultraviolet light in the range of 290 to 300 nm was used, while the α -tocopherol standard was analyzed with five different concentrations of tocopherol (Tocopherol) compared with the standard linear curve.

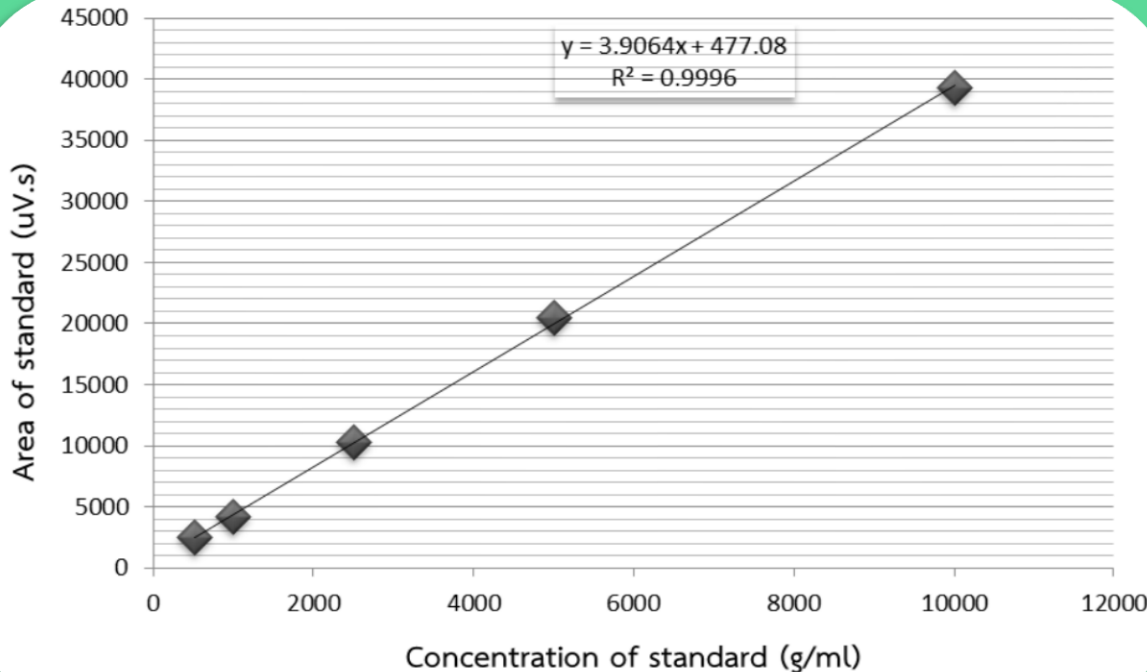
When the Area value was obtained from the HPLC when analyzing the substance to be extracted, the concentration of vitamin E extracted from the standard straight line equation could be calculated as the mean numerical value.

RESULT



α -tocopherol standardization results

The α -tocopherol standard was determined for the tocopherol content. Can graph the relationship between the tocopherol concentration. (Mg / kg) to the area of the sample (μ V.s)



The Tocopherol concentration linear curve of 5 samples of α -tocopherol standard, $R^2 = 0.9996$ and the standard linear equation is $y = 3.9064x + 477.08$.

RESULT



Results of finding vitamin E in crude palm oil

From the standard equation $y = 3.9064x + 477.08$, the concentration is the x variable and the area is the y variable. The average vitamin E concentration was $125.5043 \text{ g / ml}^3$

Conclusion of the experiment

From the study results, it was found that green solvent or Ethanol can extract tocopherol or vitamin E. The average concentration of vitamin E was $125.5043 \text{ grams per cubic milliliter}$. The standard equation $y = 3.9064x + 477.08$, the concentration is the x variable and the area is the y variable. The average vitamin E concentration was $125.5043 \text{ g / ml}^3$