

## The study the type of solvent used in the extraction and testing of anti Oxidants from *Zanthoxylum limonella* (Dennst) Alston)



Figure 1 Dried *Zanthoxylum limonella* (Dennst)



Fresh *Zanthoxylum limonella* (Dennst)

Our company is interested in studying the type of solvent used in the extraction and testing of antioxidant activity *Zanthoxylum limonella* (Dennst) Alston) Used as an ingredient in cosmetics applied to the skin and to reduce wrinkles, we have the support of research for the extraction and antioxidant activity of MAHKAWN or *Zanthoxylum limonella* (Dennst) Alston)

### objective

- A. To determine the type of solvent suitable for extraction of *Zanthoxylum limonella* (Dennst) Alston
- B. To study the effects of the antioxidant extract (*Zanthoxylum limonella* (Dennst) Alston)
- C. To study the effect of solvents suitable antioxidant activity of the extract (*Zanthoxylum limonella* (Dennst) Alston)
- D. To determine the amount that should be used to effect the antioxidants in the product formulation appropriate

## Scope of the study

Study the type of solvent used in the extraction of (*Zanthoxylum limonella* (Dennst) Alston) including ethanol, ethanol:dichloromethane, hexane, ethyl acetate And study the effect of antioxidant extracts from mixed race *Zanthoxylum limonella* (Dennst) Alston Each solvent and used in the right amount of products.

## Benefits expected to be received

1. Know the appropriate solvent for the extraction of (*Zanthoxylum limonella* (Dennst) Alston) on an industrial scale.
2. To know the right amount to use as an ingredient in products in order to have antioxidant activity.
3. For the good of the industry in the application of research data to fit in the industry.

## Research Methods

The research is divided into four stages.

1. Studying the botanical herb (*Zanthoxylum limonella* (Dennst) Alston), and earlier studies, whether it is how to extract. Used in various fields By researching data Faculty of Pharmacy Library University offices and herbal database. Faculty of Pharmacy University
2. Selected herbal (*Zanthoxylum limonella* (Dennst) Alston) And preparation plant I own tablets and then prepare the dried aromatic plants by reducing plant using a blender. The plant samples in sealed containers.
3. Extraction from plant samples to obtain crude extract



Show shaking with Shaker



Show off with solvent evaporation with rotary evaporator

4. To test the effects of antioxidant compounds that have a rough ratio of different solvents and different ways.
5. Calculate the proper amount used in cosmetic formulations.

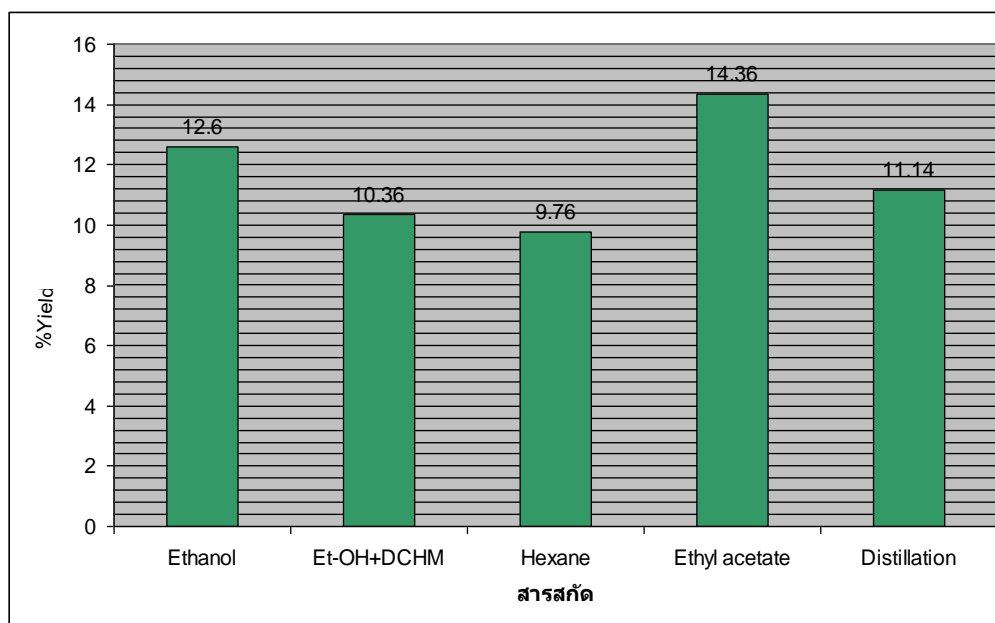
## Study results

### 1. Studies on the extraction *Zanthoxylum limonella* (Dennst) Alston

To study the type of solvent used in the extraction and steam distillation is to know the % yield obtained from each extraction method and type of each solvent types. Dielectric constant In order to predict the effects of the extract should be used solvent. Or extraction methods may be appropriate to the extracts *Zanthoxylum limonella* (Dennst) Alston experiments in extracting *Zanthoxylum limonella* (Dennst) Alston with Maceration and Distillation found % yield Obtained by extraction Ethyl acetate, Ethanol, Distillation, Ethanol and Dichloromethane, Hexane thus 14.36, 12.60, 11.14, 10.36, 9.76 Descending respectively crude extract Obtained by extraction Ethyl acetate มีค่า % yield maximum The distilled with Hexane found % yield minimum is 9.76 Demonstrated more clearly by the graph. Extract has a mild aroma. The essential oil obtained by distillation.

Figure 1 displays a graph comparing % yield obtained by extraction with various solvents and by steam distillation.

\*DCHM คือ dichloromethane

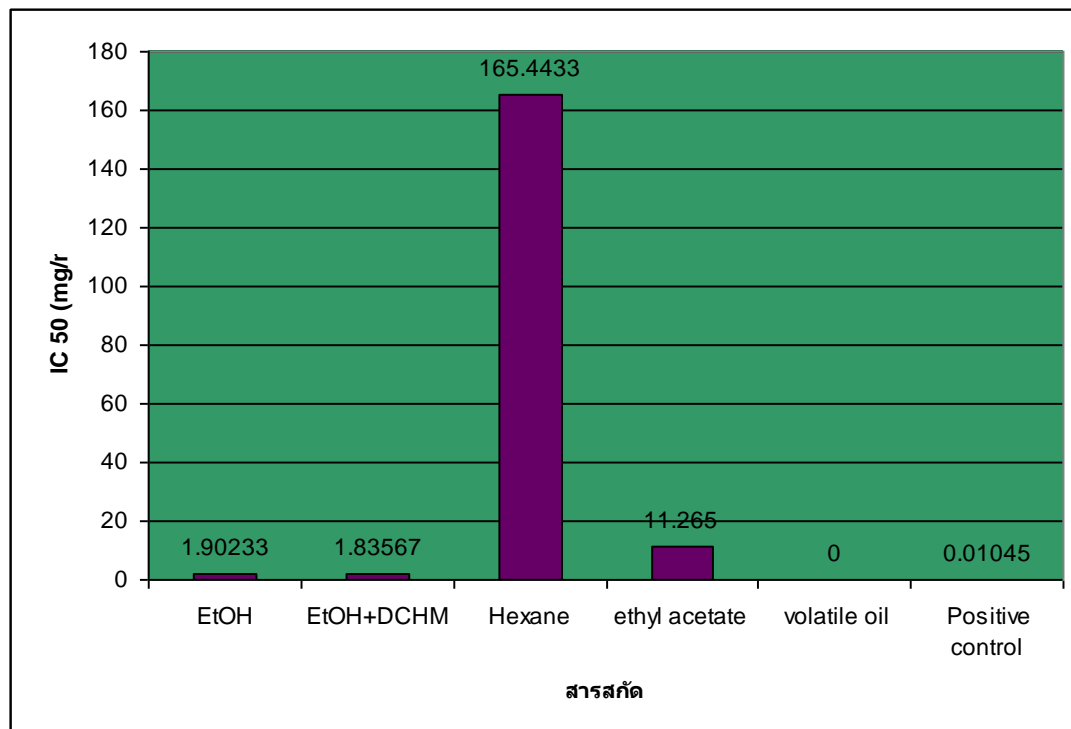


From the graph it is found that Ethyl acetate have value % yield maximum The distilled from Hexane have % yield minimum is 9.76 and found % yield Average of all the extracts 11.64

## 2. Tested the antioxidant effects of crude extract (*Zanthoxylum limonella* (Dennst) Alston) with DPPH assay.

To study the effects of the antioxidant extract *Zanthoxylum limonella* (Dennst) Alston by studying the effects of crude extract of each solvent type used extraction and distillation with water by DPPH assay, using Trolox (6-hydroxy-2,5,7,8-tetramethylchroman-2-carboxylic acid) as a positive control to measure the absorbance at a wavelength of 515 nm after incubation in the dark for 30 minutes repeat 3 times, then bring that value to calculate the % free radical scavenging of each sample

Figure 2 compares the IC<sub>50</sub> of each extract solvents and by steam distillation.



From Graph Compare each extract with IC<sub>50</sub> Positive control showed that ethanol extracts showed less than Positive control 182.04 times Ethanol and Dichloromethane, Ethyl acetate, Hexane, a mighty power less than Positive control 175.66, 1077.00, 15831.90, respectively.

## Review and summary of findings

1. Studies of this research was conducted to find a solvent suitable for extraction of *Zanthoxylum limonella* (Dennst) Alston found that the% yield of ethyl acetate, ethanol, volatile oil, dichloromethane and ethanol, hexane is shown below. here are 14.36, 12.60, 11.14, 10.36, 9.76, respectively, from the crude extract solvent has the highest% yield is 14.36% ethyl acetate.

2. Necessary to study the effects of antioxidants using DPPH assay showed that the extract has antioxidant activity from high to low Ethanol and Dichloromethane, Ethanol, Ethyl acetate, Hexane has the following values: 1.83, 1.90, 11.26, 165.44 . mg/ml of volatile oil showed no effect of antioxidant although increased concentration increased during the experimental time. In addition, the effect of the antioxidant activity of the extracts were compared with the positive control was extracted from ethanol showed less than Positive control 182.04 times

Ethanol and Dichloromethane, Ethyl acetate, Hexane, showed less than Positive control 175.66, 1077.00, 15,831.90, respectively, as can be seen extracts and Ethanol and Dichloromethane. Effect of antioxidant maximum and effective antioxidant than positive control minimum to extract distillation with water (distillation) showed low probably because the refining process can be exposed to high temperatures, so it may cause significant degradation to

In choosing a solvent suitable for extraction of *Zanthoxylum limonella* (Dennst) Alston should use ethanol because it has the effect of antioxidant close Ethanol and Dichloromethane addition, the extract is extracted from ethanol with % yield over Ethanol and Dichloromethane. And lower toxicity Therefore it can not Thus, the amount of suitable formulation should be 3-4 times the IC<sub>50</sub> dose is 5.7-7.60 mg of crude extract of Ethanol.