

## REFERENCES

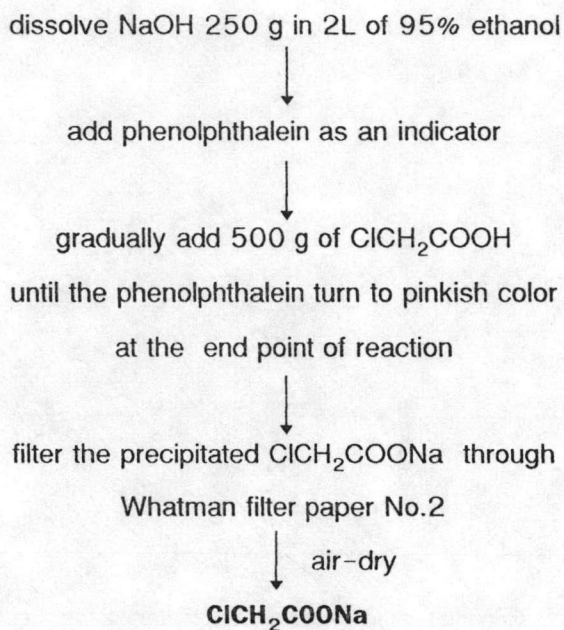
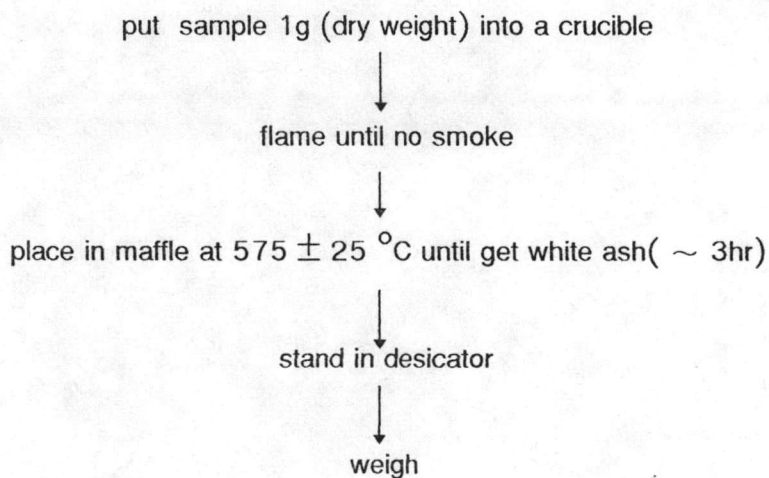
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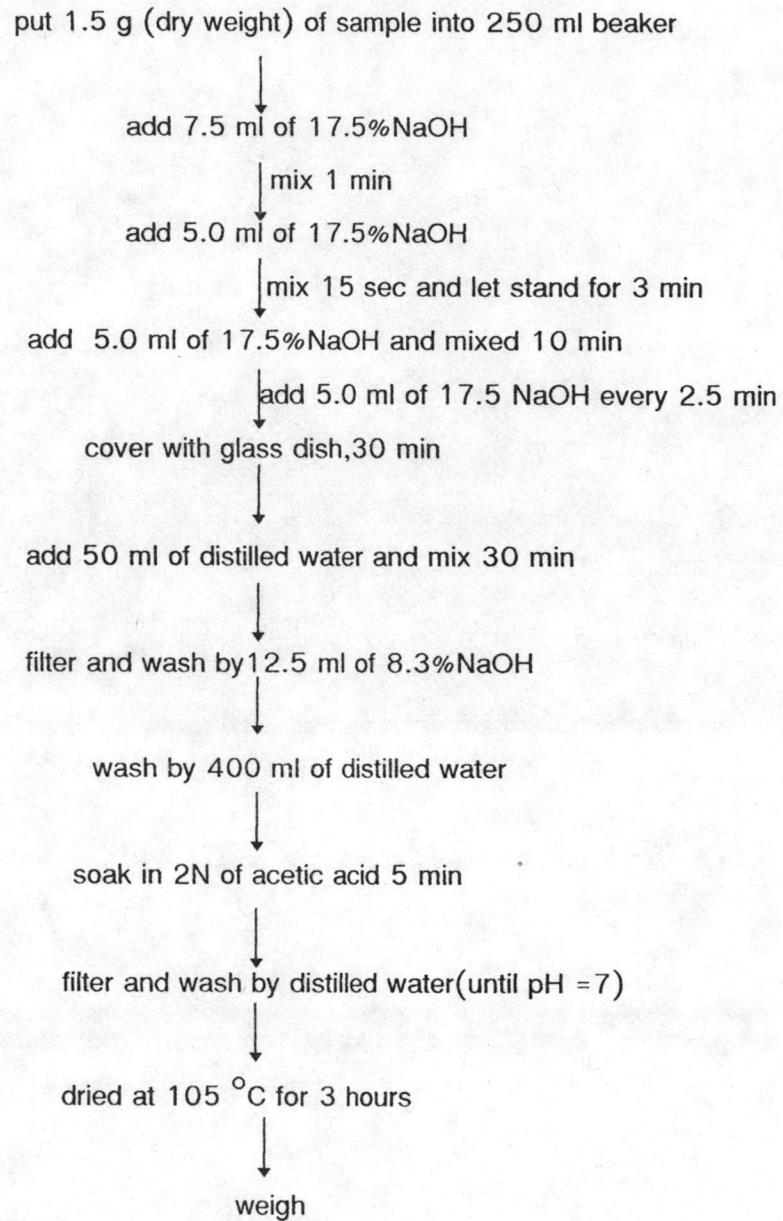
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## APPENDIX I

CICH<sub>2</sub>COONa Preparation (Green, 1963)Ash Analysis (AOAC 1984)

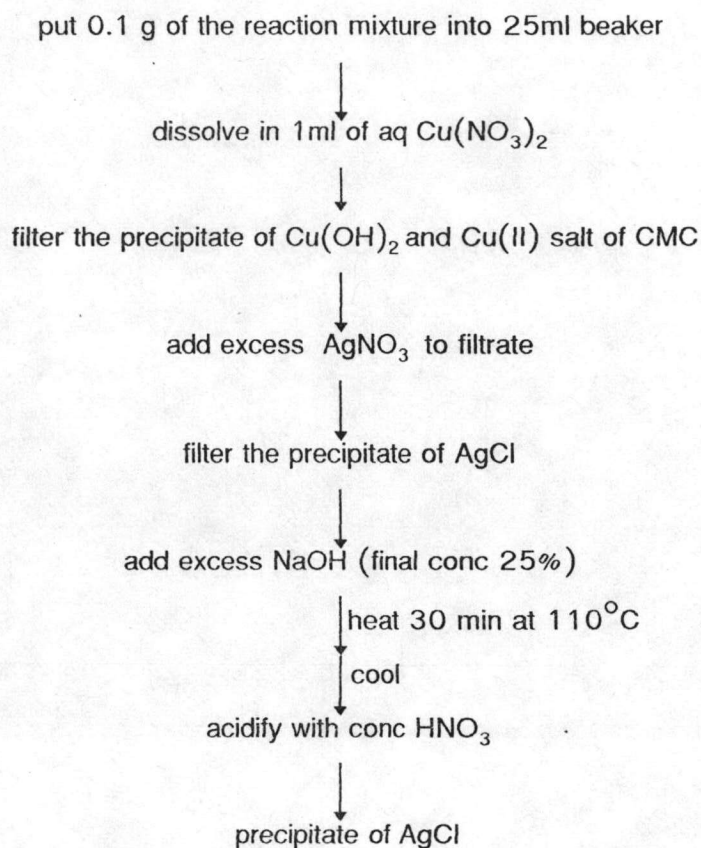
$$\% \text{Ash} = \frac{\text{ash weight} \times 100}{\text{dry weight of sample}}$$

## Cellulose Analysis (TAPPI, 1961)



$$\begin{aligned} \%(cellulose+lignin+ash) &= \% \text{ dry weight} \\ &= (\text{dry weight} / \text{initial wet weight}) \times 100 \end{aligned}$$

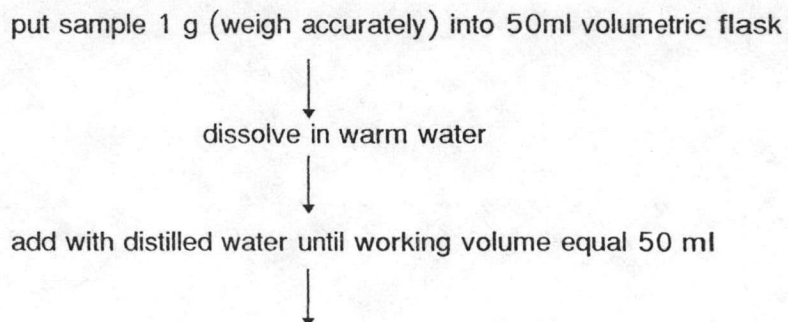
### Analysis for Unreacted $\text{ClCH}_2\text{COONa}$ (Green, 1963)



\*\* A precipitate of  $\text{AgCl}$  will show the presence of  $\text{ClCH}_2\text{COONa}$  in the original sample

### Assay carboxymethylcellulose ( Food Chemical Codex, 1981)

#### Sample preparation



colloidal solution obtained

↓ cooling at room temperature  
Solution A

### Analysis

put 10 ml solution A into 100 ml Erl.flask

↓  
add 10 ml of coppersulphate (0.125g/ml)  
↓ shake  
precipitate

### Determination of Degree of substitution (DS)

put 2 g of sample in a weighing bottle

↓ dry at 100 °C for 1 hr  
weigh

↓  
put sample into a 500ml Erlenmeyer flask

↓  
add 15ml of 70% MeOH

↓ let stand for a few minutes

add 200 ml of distilled water and 200ml of 0.5 N NaOH

↓  
shake 3-5 hour

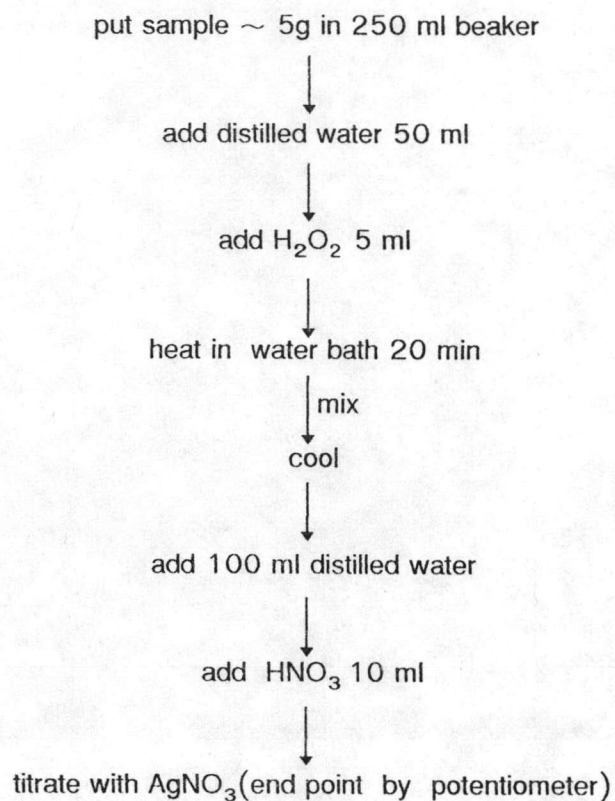
↓  
back titration with 0.4 N HCl when a phenolphthalein used as an indicator

$$DS = 0.162A / (1 - 0.058A)$$

A = milliequivalent of NaOH required per gram sample



### NaCl Determination (Food Chemical Codex, 1981)

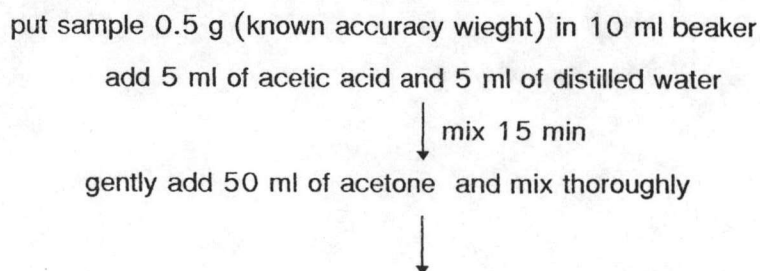


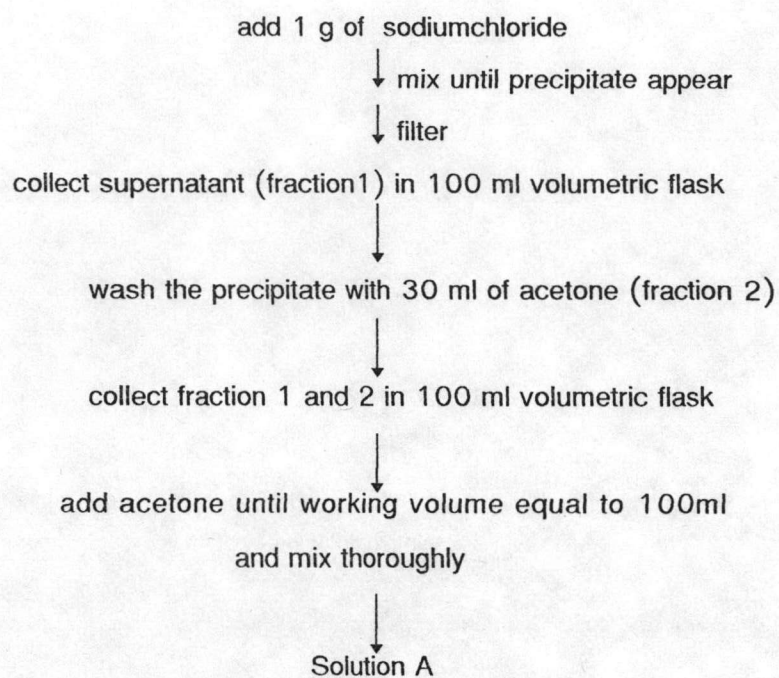
$$\% \text{NaCl} = \frac{584.4 Vc}{(100 - M)m}$$

V = Vol of AgNO<sub>3</sub>  
 c = conc of AgNO<sub>3</sub> (mol / dm<sup>3</sup>)  
 M = dry weight (g)  
 m = weight of sample (g)  
 584.4 = equivalent factor for NaCl

### Sodiumglycolate Determination (Food Chemical Codex, 1981)

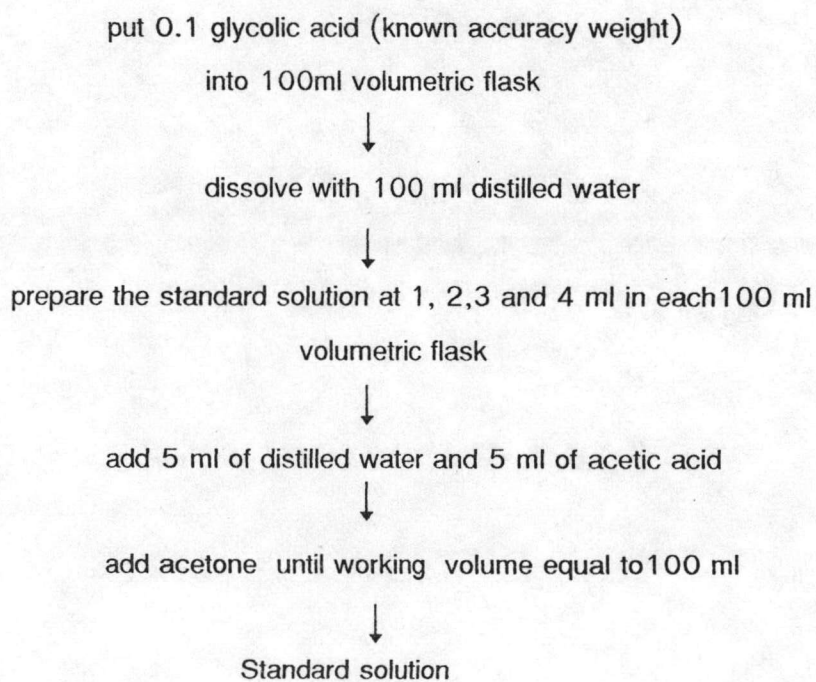
#### Sample Preparation





#### Standard solution Preparation

This standard solution can be used within 1 month.



### 2,7 dihydroxynaphthaleindiol Preparation

Dissolve 0.1 g of 2,7 dihydroxynaphthaleindiol with 1000 ml of conc sulphuric acid. Collect this solution in glass bottle. The solution can be used within 1 month.

### Blank Preparation

Glacial acetic 5 ml is added with 5 ml of distilled water in 100 ml volumetric flask. Add acetone until working volume equal to 100 ml. Prepare 2 ml of solution for determining.

### Procedure for Sodiumglycolate Determination

put 2 ml of Solution A into 25 ml of Erl flask  
↓ heat (in water bath) at 100 ° C for 20 min.  
↓ let stand at RT until it cool  
add 5 ml of 2,7 dihydroxynaphthaleindiol  
↓  
add 5 ml of 2,7 dihydroxynaphthaleindiol  
↓ mix  
cover flask with aluminium foil  
↓  
heat in water bath at 100 ° for 20 min  
↓ cool  
dilute by sulphuric acid until  
working volume equal to 25 ml  
↓  
measure optically density (OD) at wave length 540 nm

## APPENDIX II

Calculation of CMC yield (%)

$$\text{g dry wt. of CMC} = \frac{(100 - \% \text{moisture content}) \times \text{g of CMC obtained}}{100}$$

$$\% \text{ Yield of CMC} = \frac{\text{g dry wt. of CMC} \times 100}{\text{g of raw materials}}$$

$$\text{g of raw materials} = \text{cellulose powder} + \text{sodiumhydroxide} + \text{sodiumchloroacetate}$$

## VITA

Miss Kornwika Suksriwong, code C626705 was born in Bangkok, Thailand. She graduated with a bachelor degree in Agro-Industry from Faculty of Agricultural Technology, King Mongkut's Institute of Technology Ladkrabang (KMITL) in 1993. She continued study in Master degree at Biotechnology Program from Faculty of Science, Chulalongkorn University, Thailand in 1996.

