



ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่
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Appendix A

Chemicals and reagents used in systematic qualitative test

1. Acetic anhydride $(\text{CH}_3\text{CO}_2)_2\text{O}$, AR.

2. Ammonia solution, 25%.

It contains not less than 25% W/W of NH_4OH (MW.35.05) with specific gravity between 0.907-0.910.

3. Ammonia solution, diluted (10%).

It contains 10% W/V of NH_2OH .

4. Anhydrous sodium sulfate, AR.

Place crystals of sodium sulfate in a thin layer and dry first at a normal temperature and then at $40-50^\circ\text{C}$ until it losses approximately 50% of its initial weight; dry at 130°C to constant weight.

5. Bertrand's reagent.

Dissolve 5 gm of silicotungstic acid in 80 ml of water, add 0.1 ml of 10% HCl and dilute to 100 ml.

6. Carr Price's reagent.

Dissolve 25 gm of antimony (III) trichloride in 75 gm of methanol free chloroform or carbon-tetrachloride. Prepare immediately before use.

7. Chloroform AR.

8. Ethyl ether AR.

9. Fehling's solution.

I. Dissolve 34.66 gm of copper (II) sulfate in 200 ml of water and dilute to 500 ml,

II. Dissolve 173 gm of sodium and potassium tartrate and

100 gm of sodium hydroxide in 300 ml of water and after cooling dilute to 500 ml,

Mix equal volumes of I and II immediately before use.

10. Ferric chloride solution, (3%)

Dissolve 3 gm of ferric (III) chloride in 80 ml of water and dilute to 100 ml.

11. Ferric chloride solution, diluted (1%)

Dissolve 1 gm of ferric (III) chloride in 80 ml of water and dilute to 100 ml.

12. Hematoxylin solution.

To a solution of 360 ml of water with 40 gm of ammonium alum solution, add stepwise a solution prepared by dissolving 4 gm of hematoxylin in 25 ml of alcohol, then allow to stand exposed to air and day light for 8 days. Filter and add 250 ml of methyl alcohol and glycerin (1:1 V/V). The reagent should be used after a few days.

13. Hydrochloric acid, concentrated.

Aqueous solution containing 35% W/W HCl (MW. 36.5), specific gravity 1.18.

14. Hydrochloric acid, diluted (10% W/V).

Dilute 30 ml of 35% W.W HCl with water to 100 ml.

15. Hydrochloric acid, 2% W/V.

Dilute 20 ml of 10% W/V HCl with water to 100 ml.

16. Keddee's reagent.

Dissolve 1 gm of 3,5-dinitrobenzoic acid in 100 ml of ethanol. Prepare immediately before use.

17. Lugol's solution.

Dissolve 1 gm of potassium iodide in 100 ml of water and add to that solution 0.5 g of iodine.

18. Mayer's reagent.

Dissolve 1.35 gm of mercuric chloride in 60 ml of water, add 5 gm of potassium iodide in 10 ml of water and dilute to 100 ml.

19. Methylene blue solution.

Dissolve 0.15 gm of methylene blue in 100 ml of water.

20. Molisch's reagent.

Solution I. Contains not less than 17% V/V of H_2SO_4 .

Solution II. Two or 20% thymol in alcohol.

21. Potassium hydroxide in alcoholic solution, 0.5 N.

It contains 28.05 gm KOH in 1000 ml. Dissolve 30 gm of potassium hydroxide in 20 ml of water and after cooling, dilute to 1000 ml with purified alcohol. Decant the clear liquid 24 hours later. Determine the normality before use, by a titrating with hydrochloric acid of the same normality and using phenolphthalein as indicator. The solution should be kept in a dark rubber stoppered flask.

22. Potassium hydroxide alcoholic solution, 1 N.

Dissolve 65 gm of potassium hydroxide in 40 ml of water.

Dilute the aqueous solution with purified alcohol to 1000 ml and shake for 5 minutes. Decant the clear liquid 24 hours later.

Determine the normality as indicated in Item 21.

23. Styassny's reagent.

Mixture of hydrochloric acid and formaldehyde (1:2).

24. Sulfuric acid (Concentrated sulfuric acid).

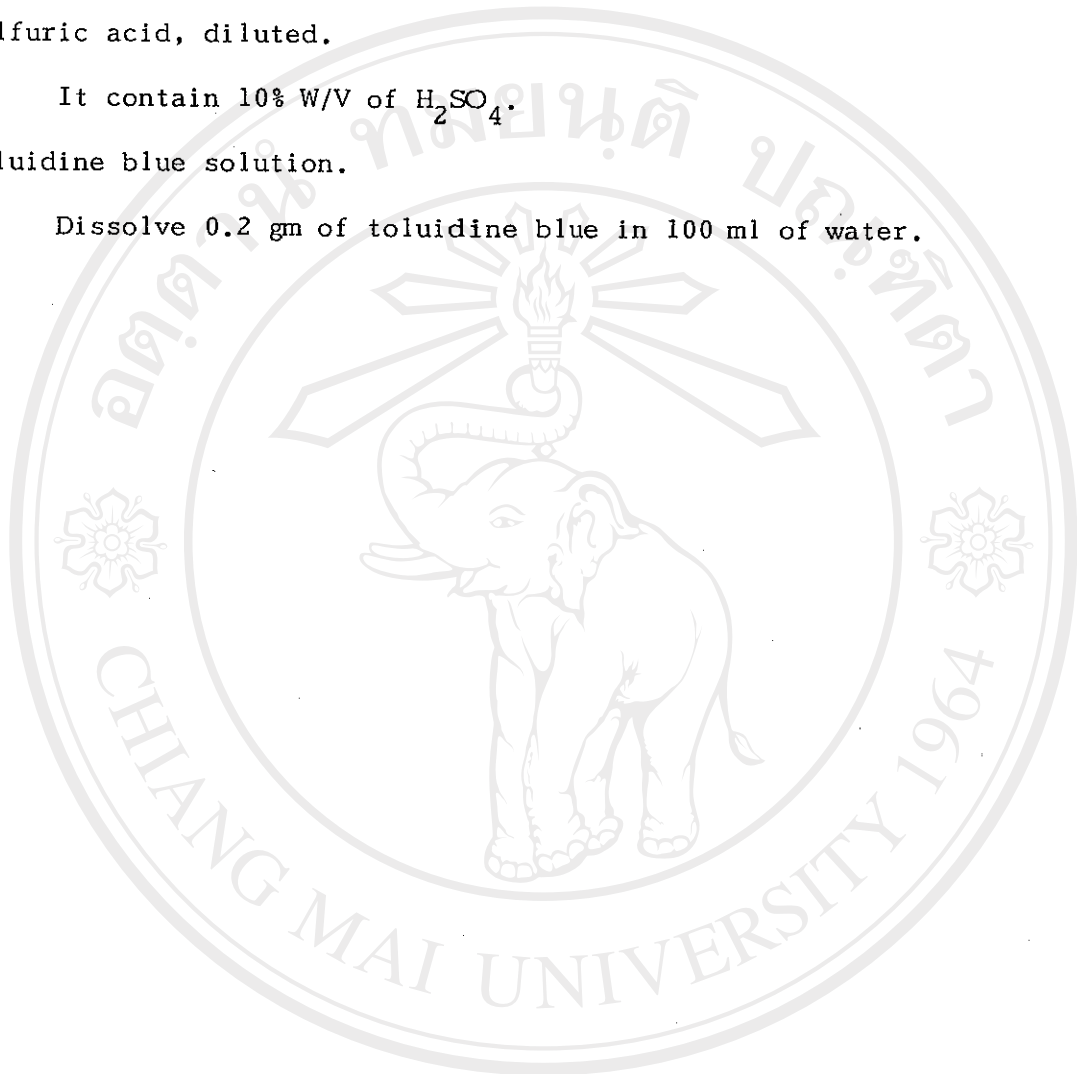
It contains not less than 95% W/W of H_2SO_4 (MW 98.08) with specific gravity between 1.837-1.841.

25. Sulfuric acid, diluted.

It contain 10% W/V of H_2SO_4 .

26. Toluidine blue solution.

Dissolve 0.2 gm of toluidine blue in 100 ml of water.



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Appendix B

Spraying reagents for TLC

1. Ehrlich's reagent.

A solution is made of 1 gm of 4-dimethylaminobenzaldehyde in a mixture of 25 ml of 36% HCl and 75 ml methanol.

Treatment after spraying : The plate has to be warmed in some cases.

2. Vanillin-sulfuric acid.

One gm vanillin is dissolved in 100 ml conc. H_2SO_4 .

Treatment after spraying : heating at $120^\circ C$ is carried out until the spots attain maximum colour intensity.

3. Sulfuric acid in methanol.

Equal volumes of conc. H_2SO_4 and methanol are cautiously mixed with cooling. The chromatogram is sprayed with this reagent, allow to dry for 15 minutes in the air and then heated at $110^\circ C$ until the colour or fluorescence developed has reached its maximum.

4. Anisaldehyde-sulfuric acid.

One ml of conc. H_2SO_4 is added to a solution of 0.5 ml anisaldehyde.

Vita

Name : Miss Supranee Seangsai

Date of Birth : March 8, 1947.

Institution Attended :

Certificate of Mathayom Suksa V, Aroon Pradit School,
Petburi, 1964.

Bachelor of Pharmacy , Chiang Mai University,
Chiang Mai, 1971.

Previous Occupation :

Instructor, Department of Pharmacognosy, Faculty of Pharmacy,
Chiang Mai University, Chiang Mai.

The seal of Chiang Mai University is a large, faint watermark in the background. It features a central elephant standing on a circular base. Above the elephant is a sunburst or flame-like symbol. The text "CHIANG MAI UNIVERSITY 1964" is written in a circular path around the elephant. At the top, there is Thai text: "มหาวิทยาลัยเชียงใหม่".

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