

EXPERIMENTAL PHYTOCHEMISTRY

A Laboratory Manual

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PREFACE

It is a great pleasure to introduce this experimental manual in phytochemistry, intended for use in the course (Pharmacognosy II) PHG 351. The experiments therein were selected to provide the student with an excellent expertise in both qualitative and quantitative analysis of medicinal plant constituents, particularly glycosides and alkaloids. A brief consideration was also given of tannins as well as important carbohydrate related drugs not included in the laboratory course of PHG 251. The student is advised to read and understand well the procedure, before its execution. He should try to understand how each step is done and the rationale behind it. This should intensify the gained knowledge not only about the properties of the compounds analyzed, but also about the various procedures utilized.

This effort wouldn't have been possible, if it were not for the efforts of various scientists and their published works, whether as textbooks, laboratory manuals or research papers, as shown in the references. In addition, the effort of each and everyone who co-operated in making this manual a reality, is acknowledged and greatly appreciated.

M.M. El-Olemy
F.J. Al-Muhtadi
A.A. Afifi

GENERAL INSTRUCTIONS

1. Use as small quantities as possible. Avoid wasting chemicals and materials.
2. Clean the test tube as soon as you finish the test. It is easier to clean a wet tube than a dry one.
3. When you boil a solution in a test tube, have it inclined away from you and half filled only so as to avoid spurting.
4. When you use a reagent bottle, stopper it as soon as you take the required quantity. Mixing stoppers ruins reagents and messes up results.
5. Write down your results as soon as you notice them. Do not depend on memory. Memory is short-lived, while written records last forever.
6. Avoid waste of reagents, water or gas. Be careful that the Bunsen burner is well lit and not lit from the lower opening.
7. Never taste the chemicals used since some substances are poisonous. Also never touch the chemicals with your hand. Always use a spatula (for solid chemicals) or a dropper (for liquids), since some chemicals are caustic.
8. Be careful when using alcohol, pet. ether or ether. Fire should be away. Their bottles should never be left without stoppers.
9. Be careful when working with concentrated acids. Conc. H_2SO_4 or reagents containing it should be added down the walls of the test tube. Avoid splashing. Keep tube inclined away from eyes and from you.
10. When a reaction is indicated to be done in the hood (or fuming cupboard), it should be done there. Hazardous reactions are done in the hood.
11. Follow the instructions exactly. If you are asked to add one ml this means that only one ml. should be added, nothing more and nothing less. It is of fundamental importance to follow the instructions absolutely and carefully.