

Course Code	Course Name	Credits
26CH953	PHYTOCHEMISTRY	02

Course Description

This course focuses on the practical extraction, isolation, and identification of phytoconstituents from herbal and natural sources. It introduces students to successive solvent extraction methods for obtaining plant extracts and calculating percentage yield. The course includes Thin Layer Chromatography (TLC) for detection, separation, and analysis of phytochemicals. Students gain hands-on experience in the extraction and estimation of volatile oils using the Clevenger hydro-distillation method.

Course Objective

- To introduce students to the principles and methods of herbal extraction, including successive solvent extraction and hydro-distillation techniques for obtaining plant constituents and volatile oils.
- To provide practical training in chromatographic techniques, especially Thin Layer Chromatography (TLC), for the separation, detection, and identification of phytoconstituents.
- To develop skills in the isolation and purification of bioactive natural compounds such as caffeine and piperine from plant materials and marketed formulations.
- To train students in qualitative phytochemical analysis using standard chemical tests for alkaloids, flavonoids, glycosides, tannins, saponins, steroids, and related compounds.
- To strengthen laboratory, analytical, and research skills required for pharmacognosy, phytochemistry, quality control, and herbal drug standardization.

Skill Enhancement Outcomes

Upon successful completion of this course, the learner will be able to:

- Develop skills in herbal extraction techniques using successive solvent extraction and hydro-distillation methods.
- Acquire practical knowledge of TLC for detection, separation, and identification of phytoconstituents.
- Perform isolation and purification of natural compounds such as caffeine and piperine from plant and commercial sources.
- Apply qualitative chemical tests for the identification of major classes of phytochemicals.
- Enhance laboratory competency and research skills in pharmacognosy, phytochemistry, and herbal drug standardization.

Course Content and Practical Training

- Preparation of extracts of Herbs by successive solvent extraction method to record the percentage yield.
- Detection of Phytoconstituents by TLC method.
- Extraction and estimation of volatile oils by Clevenger's method (Hydro distillation method)
 - Isolation of the following Phytoconstituents
 - Caffeine from Tea
 - Caffeine from marketed product
 - Piperine from black pepper
- Detection of Phytoconstituents such as i) Alkaloids, ii) Steroids, Triterpenoids and their glycosides and Saponins iii) Flavonoids and their glycosides iv) Anthracene Glycosides v) Coumarins vi) Tannins by chemical tests and TLC methods.

Learning outcome

Upon successful completion of this course, students will be able to extract, isolate, identify, and qualitatively analyze phytoconstituents from herbal and commercial sources using solvent extraction, hydro-distillation, TLC, and standard chemical testing methods.