

CHHATRAPATI SHAHU JI MAHARAJ UNIVERSITY

SCHOOL OF PHARMACEUTICAL SCIENCES

VOCATIONAL COURSE

VOC141

STRENGTHEN YOUR COMPETENCE IN HERBAL DRUG FORMULATION

Starting from 2023

LIMITED SEATS

Course: Extraction and formulation technologies for medicinal and aromatic plants

OBJECTIVES

- To understand the complexity of herbal drug extraction, analysis of phytoconstituents
- To understand the formulation techniques of herbal extracts
- To evaluate the various activities through in vitro assays

Who should enrol?

- Researcher's in Pharmacognosy and Phytochemistry
- Graduate and Post graduate students of Botany/Zoology/Chemistry/B.Pharm/M.Pharm.

Benefits of course

- The course will help in undertaking extraction techniques like Soxhlet extraction/maceration/micro wave assisted extraction of herbal plants for taking research in herbals
- Learn the techniques of analysis of phytoconstituents
- Learn the formulation development of herbal extracts
- Certificate of completion

Duration: 6 Months (75 hours)

Time: 11 am to 4.00 p
m (5 hours/day)

Fees: Rs. 5000/-

Course **coordinators**: Dr. Nisha Sharma (For herbal extraction, analysis of phytoconstituents and in vitro assays) and Dr. Kalpana (For formulation development)

VENUE: SCHOOL OF PHARMACEUTICAL SCIENCES

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Nisha Sharma *Kalpana* *Dr. Kalpana* *Dr. Nisha Sharma* *Dr. Kalpana* *Dr. Nisha Sharma* *Dr. Kalpana*

Paper Name:

Extraction and formulation technologies for medicinal and aromatic plants P

Paper Code:

Course Objectives:

- The program will impart the students end to end knowledge of important aspects of herbal drug technology.
- To learn to handle various conventional and Novel extraction techniques
- It will enable the students to build expertise in various disciplines of herbal medicines, which can be applied in the herbal industry in various departments like manufacturing, research and development, formulation development, drug discovery.
- To give students an in depth understanding of various aspects of product development such as pre-formulation study design.
- To understand the preparation and development of herbal formulation.

Course Outcomes:

- Knowledge of different conventional and novel methods of extraction of crude drugs.
- At the end candidate shall be able to learn the Preparation and evaluation of herbal formulation (solid dosage form: Tablets)
- Know about the formulation and evaluation of semisolid dosage forms (Creams/Gels)
- Know various bases used for different types of semisolid products (Creams/Gels)

THEORY (1 credit)

1. **Extraction Process:** Basic principles and extraction techniques of different phytoconstituents.

No. of Hours: 5

- Different methods of extraction- Maceration, Infusion, Digestion, Decoction, Percolation, Hot Continuous Extraction, Aqueous Alcoholic extraction by

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Fermentation, Counter Current extraction, Sonication, Supercritical Fluid extraction

- Choice of solvents for extraction
- Factors for Selecting an Appropriate Extraction Method

2. Formulations: Conventional formulations : Tablets and Semi solid dosage forms

No. of Hours: 10

Tablets:

a. Introduction, ideal characteristics of tablets, classification of tablets. Excipients, Formulation of tablets, granulation methods, compression and processing problems. Equipment and tablet tooling.

b. **Tablet coating:** Types of coating, coating materials, formulation of coating composition, methods of coating, equipment employed and defects in coating.

c. **Quality control tests:** in process and finished product tests

Semi Solid Dosage Forms: Formulation and preparation of the following preparations: cold cream and vanishing cream, and sunscreens.

Experiments (4 hours each) (15x4=60 Hrs) (2 credits)

Extraction Methods:

1. Extraction by Conventional method Maceration,
2. Extraction by Conventional method -Soxhlet extraction
3. Extraction by Conventional method Reflux and Percolation
4. Extraction by Novel method Microwave Assisted
5. Extraction by Novel method Ultrasonic method

Incorporation of prepared and standardized extract in formulations like tablets and semi solid dosage forms and their evaluation as per Pharmacopoeial requirements: 6. Preparation of herbal tablets by wet Granulation method

7. Evaluation of herbal tablets for Weight variation, Size, Hardness
8. Evaluation of herbal tablets for Disintegration and dissolution test
9. Coating of herbal tablets-film coating of tablets/granules
10. Coating of herbal tablets-Enteric coating of tablets/granules
11. Preparation of herbal Cold Creams
12. Preparation of herbal vanishing cream
13. Preparation and evaluation of herbal Gel

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14. Evaluation of prepared herbal Creams 15.

Evaluation of prepared Gel

Visit to Herbal Industry

Total weightage of Theory - 40% of marks, 15 hours (1 Credit)

Total weightage of Practical - 60% of marks, 30 hours + 30 hours (2 Credit)

Study Material:

1. Dr. C.K. Kokate, Practical Pharmacognosy, 1988, Vallabh Prakashan, Delhi.
2. Dr. P. Mukherjee, Quality control herbal drugs, 2005, Business Horizons,
3. A.N. Kalia, Textbook of Industrial Pharmacognosy, 2005, CBS Publishers, New Delhi.
4. J.B. Harborne, 1998. "Phytochemical methods", Chapman and Hall.
5. The theory and Practice of Industrial Pharmacy, Leon Lachman; Herbert A Liberman, Joseph L Kanig; Fourth edition. 2020, Vergese publishing house
6. Ansel's Pharmaceutical Dosage forms and Drug delivery systems, Loyd V. Allen, Jr. Nicholas G, Popovich, Howard C. Ansel, Eight edition 2005, Wolters Kluwer Health Pvt Ltd, New Delhi
7. Pharmaceutical dosage forms: Tablet vol 1-3, H. A. Liberman, Leon Lachman & J.B. Schwartz, Marcel Dekker 2008

SKILL PARTNERS : ADARSH HERBAL CARE, LUCKNOW

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