

ABN Seal College
Department of Chemistry
Add-on Course

**ISOLATION AND PURIFICATION TECHNIQUES OF DIFFERENT IMPORTANT ORGANIC COMPOUNDS
FROM VARIOUS NATURAL RESOURCES**

COURSE CONTENT

Contact Hours		
Lecture	:	08 Hours
Laboratory Experiments	:	18 Hours
Home Assignment	:	06 Hours
Total	:	32 Hours

Lectures

- ❖ **Natural products:** **02 Hrs.**
 - Importance of natural products towards drug discovery, occurrence and types of natural products.
 - Terpenoids- Classifications, Occurrence, General properties of terpenoids, Isoprene rules, isolation, structure elucidation of citral.
 - Alkaloids- Classifications, Occurrence, General properties of Alkaloids like morphine, nicotine, etc., and its isolation.

- ❖ **Isolation Techniques:** **01 Hrs.**
 - Extraction techniques
 - Separation techniques of different biologically important natural products

- ❖ **Spectroscopy:** **02 Hrs.**
 - Background and various principles
 - Ground level analysis for molecular system

- ❖ **Chromatography:** **03 Hrs.**
 - General principles
 - Classification of chromatographic techniques
 - Chromatographic methods
 - Thin layer chromatography- Stationary phases, Mobile phases, Development of chromaplate, Zone detection analysis, Spraying reagents etc.
 - Column chromatography- Theory, Stationary phases, Mobile phases, Column packing, Sample loading etc.

Laboratory Experiments

18 Hrs.

- ❖ Extraction of Piperine from black pepper and check purity level with the help of TLC
- ❖ Isolation of Lycopene from tomato and check the OD value using different concentration at λ_{\max} 472 nm.
- ❖ Isolation of Menthol from peppermint
- ❖ Process of making TLC plate, separation of mixture of compounds by TLC and calculation of R_f value.
- ❖ Separation of pigments (Chlorophyll and Xanthophyll) from green leaves with the help of column chromatography.

Home Assignments

06 Hrs.

- ❖ MCQs
- ❖ Literature survey on natural products (Special references with terpenoids and alkaloids).

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“Isolation and Purification Techniques of Different Important Organic Compounds from Various Natural Resources”

Outcome:

The attendance of participants was almost 100 %. The course was started with a theoretical lecture delivered by the outsource resource person, and the students' feedback was quite impressive from the day one. In the second half of the first day there was a hands on training on the preparation of TLC plates using silica gel. Each of the participant individually prepared TLC plate. From the next day along with the theoretical lecture there was an experimental session of separation of organic compounds from various natural sources. The total no. of participates was divided into five group during each experimental session i.e., each of the group was comprised of four students. The whole hearted participation of the students was noted in each and every session.

Natural source	Extracted organic compound
Black Pepper	Piperine
Tomato	Lycopene
Menthol	Peppermint
Leaf Pigments	Spinach Leaves

Furthermore, after the separation of each organic compound, participants performed the separation technique following the provided instruction. In addition, the purity of the separated compounds was also checked by the various analytical/ instrumental methods as far as available in the department. This type of purity check is very much preliminary and our target was to paint the idea of the direction of the primary stage of research to our UG students. Noteworthy we felt our beneficiary track was appreciatively followed by each of the participants.

Students were further assigned with the project work on the literature survey on various topics. Notably some of the assignments were highly impressive. There was also a MCQ based test at the final of the day of the course. The gradation of the course was awarded by counting all of those above *viz.* active participations, project work, MCQ test, etc. The performance of the student on an average was highly appreciable. The students feedback we collect was very much positive and they demand it for the next time too. We indeed found the curiosity among the students was enormously high. Students even share their willingness of higher study and take some suggestion from all of the speaker. It was a friendly and very much effective interactive session throughout. Overall, it was very fruitful for the students in their advancement.