

**DEPARTMENT OF CHEMISTRY****SCHEVAC01 - Phytochemistry and Biological Activities of Medicinal Plants****Learning objectives**

- To learn about phytochemistry and biological activities of medicinal plants

**Course Outcomes**

After completion of the course, student will

- Understand the concepts of phytochemistry
- Able to appreciate the medicinal values of plants
- Know the various techniques involved in the phytochemistry
- Familiarize the bio-active components present in the plants

**Unit I**

Extraction – purification of bio-active compounds from plants – cold & hot extraction – Soxhlet extraction – crude extracts purification by various solvents.

**Unit II**

Isolation of bioactive compounds – chromatographic techniques – thin layer chromatography – liquid chromatography – HPLC and UPLC.

**Unit III**

Structural analysis of bioactive compounds – IR spectroscopy – Mass spectrometry – NMR spectroscopy.

**Unit IV**

Herbal medicine – History of herbal medicine – different types of herbal medicine – Ayurveda, Siddha and Unani – Pharmacological action – clinical research and traditional uses of Indian medicinal plants – *Eclipta alba*, *GymnemaSylvestre*, *Ocimum sanctum*, *Curcuma longa*.

**Unit V**

Phytopharmaceuticals and their health benefits – anthocyanins, carotenoids, lycopene, isoflavones, polyphenols, omega 3 - fatty acids, biological effects of resveratrol.

**Text books:**

Godte V.M. 2000. *Ayurvedic pharmacology and therapeutic uses of medicinal plants*, Bharathiya Vidya Bhavan, Mumbai.

Grewal, R.C. 2000. *Medicinal Plants*, Campus Books International, New Delhi.

Harbone, J.B. 1998. *Phytochemical Methods A guide to modern techniques of plant analysis*, 3<sup>rd</sup> Edition. Springer (India) Private Limited, New Delhi.

Majumdar, A. 2000. *Home remedies in Ayurveda*, Amar Granth Publications, New Delhi.

Silverstein, R.M. and F. X. Webster.1998. *Spectroscopic identification of organic compounds*, John-Wiley.

Willard, H.H., L. L. Merrit and J.A. Dean, 1987. *Instrumental Methods of analysis*. Wadsworth Publishing, Belmont, California.