

OC H 563: NATURAL PRODUCTS CHEMISTRY

Course Outcomes

- Students will get a good understanding of isolation, classification natural products,
- To learn methods of structure elucidation and synthesis of various types of alkaloids, terpenoids, carotenoids, steroids and steroidal hormones with representative examples, transformations in steroids and hormones.
- To study steroidal oral contraceptives.
- Students will also learn the chemistry of Vitamins and Antibiotics.

UNIT-I

[12 Hours]

Alkaloids: Definition, Classification and isolation, general methods of structural determination, structural elucidation, stereochemistry, rearrangement, synthesis of Adrenaline, Ephedrine, Nicotine, Cocaine, Papaverine, Piperine, Cinchonine, Quinine, Morphine and Reserpine.

UNIT-II

[12 Hours]

Terpenoids: Classification, isoprene and special isoprene rules, general methods of structure determination. Structure & synthesis of α -Pinene, Camphor, Farnesol, Zingiberene, α -Santonin, Vetivones, Caryophyllene, Abietic acid and Squalene.

Carotenoids: Introduction and geometrical isomerism. Structure and synthesis of β -Carotene and Lycopene.

UNIT-III

[12 Hours]

Steroids: Introduction and Nomenclature, Blanc's rule, Diel's hydrocarbon, Chemistry of Cholesterol, Ergosterol, Vitamin-D, Stigmasterol & bile acids.

Steroidal hormones: Chemistry of Oestrone, estradiol, estriol and their chemical relationship. Progesterone, androsterone and testosterone. Steroidal oral contraceptives.

UNIT-IV

[12 Hours]

Vitamins: Classification, Sources and Deficiency diseases, Biological functions of Vitamins, Study of Vitamin A₁ and A₂, Vitamin B₁, B₂, B₆ and B₉, Vitamin H, Vitamin C, Vitamin E, Vitamin K.

Antibiotics: Introduction, Classification, Chemistry of Penicillin V, Cephalosporine C, Streptomycin, Chloramphenicol and Tetracycline.

References

1. Natural Products Chemistry, Voll & II, G. R. Chatwal, Himalaya, (1990).
2. Chemistry of Natural Products, Voll & II, O. P. Agarwal, Goel, (1985).
3. Organic Chemistry, Voll & II, I. L. Finar, Longman ELBS, (2000).
4. Chemistry of Natural Products-A Unified Approach, N. R. Krishnaswamy, University Press, (1999).
5. Chemistry of Natural Products, S. V. Bhat, B.A. Nagasampagi, M. Sivakumar, Springer-Narosa, (2005).