



Carbohydrate Chemistry and Natural Products

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
CHM	429	Carbohydrate Chemistry and Natural Products	4	2	3	1	CHM 325

Objectives:

- Organic chemistry had its genesis in the study of naturally occurring substances, and this remains a constant source of information and intellectual challenge. In this section some of the most interesting and important classes of natural products will be discussed.
- To promote understanding of the significance of natural products in terms of their biosynthesis, biological activity and chemical synthesis, combining organic chemistry and biological chemistry.

Syllabus:

Introduction, preparation and chemistry of V.O. Introduction, of carbohydrates Occurrence and role of terpenes in nature, determination of % o V.O. in plant material. General methods for structure determination of terpenes, Mono- and disaccharides. Classification of constituents of V.O. Hydrocarbones (unsaturated alicyclic and aromatic hydrocarbons). Polysaccharides, homopolysaccharides. Alicyclic hydrocarbons (mono- and bicyclic monoterpenes hydrocarbon , sesquiterpenes (acyclic) Heteropolysaccharides. Monocyclic sesquiterpenes, bicyclic sesquiterpenes. Oxygenated terpene compounds (terpene alcohols). Derived carbohydrates, dietary fibers. Classification of terpene alcohols (aliphatic, aromatic). Introduction of glycosides. Simple phenolic glycosides. Alicyclic terpene alcohols (monocyclic, bicyclic, and tricyclic terpene alcohols) Anthraquinones. Phenols and phenolic ethers, classification of phenols (monohydric and dihydric), Flavonoids. Trihydric phenols and phenolic ether, tetrahydric phenols. Aldehydes (aliphatic, acyclic terpene) aldehyde. Flavonoids (cont). Coumarines. Aromatic aldehyde, ketones (acyclic, monocyclic) Lignans. Bicyclic ketones, oxides, peroxides, terpene esters, the body action and, iridoids. Cardiac glycosides, *thioglycosides, cyanoglycosides. Cardiac glycosides; Saponins, tannins.

Textbook:

Chemistry of Natural Products, Bhat, Sujata V., Nagasampagi, Bhimsen A., Sivakumar, Meenakshi Jointly published with Narosa Publishing House 2005, XXXI, 840 p., Hardcover ISBN: 978-3-540-40669-3

References:

- Organic Chemistry, 4 th Eddition by Robert Wlorrison and Robert Boyd, Allyn and Bacon, Ir.c., Boston, London, Sydney, Toronto, 1983.
- Organic Chemistry, 6 th Eddition by I. L. Finar, Longmann Group Limited, Volume 1 and 111975.

