

11

Terpenes as Useful Drugs

Biswa Mohan Sahoo^{*}, Bimal Krishna Banik[†], and Abhishek Tiwari[‡]

DOI: [10.1201/9781003008682-11](https://doi.org/10.1201/9781003008682-11)

CONTENTS

[11.1 Introduction](#)

[11.1.1 Terpenes as Antimalarial Drugs](#)

[11.1.2 Terpenes as Anthelmintic Drugs](#)

[11.1.3 Terpenes as Anti-inflammatory Drugs](#)

[11.1.4 Terpenes as Anti-HIV Drugs](#)

[11.1.5 Terpenes as Anti-Alzheimer Drugs](#)

[11.1.6 Terpene as Antimicrobial Drugs](#)

[11.1.7 Terpenes as Anticancer Drugs](#)

[11.1.8 Terpenes as Antioxidants](#)

[11.1.9 Immunomodulatory Activity](#)

[11.1.10 Terpenes as Hepatoprotective](#)

[11.1.11 Terpenes as Anti-Diabetic Drugs](#)

[11.2 Miscellaneous](#)

[11.3 Conclusion](#)

[Abbreviation](#)

[Acknowledgment](#)

[References](#)

11.1 Introduction

Terpene is a hydrocarbon isolated from turpentine, volatile oil obtained from pine trees. Terpenoids are modified terpenes with changed positions of methyl groups or added oxygen atoms. Terpenoids are volatile substances and are mainly responsible for the smell of plants and flowers. These are common constituents of different plant groups namely citrus, conifers and eucalyptus and are usually present in their leaves and fruits. The basis of classification of naturally occurring terpene is the number of carbon atoms present and most of them possess the general formula of $(C_5H_8)_n$, where 'n' differ among the various groups. So, the classification of terpenes can be made rationally based on the presence of isoprene units in their structures [1].

Some of the common properties of terpenoids include most of these compounds are colorless and fragrant liquids at room temperature and lighter than water. Some terpenoids are solid like camphor. Terpenoids are generally insoluble in water but can be dissolved in organic solvents. Structurally, terpenoids are open-chained or cyclic unsaturated compounds with one or more than one double bond. Chemically, terpenoids are liable for oxidation by oxidizing agents and when exposed thermally, can decompose to isoprene. Terpenoids also undergo polymerization and dehydrogenation to produce long-chain products. Based on the cycles present in the terpenoids, these are further classified into acyclic, monocyclic, bicyclic, tricyclic and tetracyclic terpenoids [2].

Natural monoterpenes such as limonene, carvone, carveol, pyrethrin etc have been reported to exert their antimicrobial or anticancer effect through various mechanisms such as apoptosis up-regulation, influencing the posttranslational modification or prenylation of some physiologically important protein molecules and blocking the repolarization of sodium channel of neurons of target tissue (Table 11.1) [3].

* Roland Institute of Pharmaceutical Sciences, Berhampur affiliated to Biju Patnaik University of Technology (BPUT), Rourkela, Odisha, India. Corresponding author e-mail address: drbiswamohansahoo@gmail.com.

† Department of Mathematics and Natural Sciences, College of Sciences and Human Studies, Prince Mohammad Bin Fahd University, Al Khobar, Kingdom of Saudi Arabia. Corresponding author e-mail address: bimalbanik10@gmail.com.

‡ Faculty of Pharmacy, Pharmacy Academy, IFTM University, Lodhipur Rajput, Moradabad-244102, Uttar Pradesh, India.

DO NOT COPY
abhishekt1983@gmail.com