# INTRODUCTION

Throughout history, mankind has always been interested in naturally occurring compounds from pre-biotic, microbial, plant and animal sources. Various extracts of different parts of plants have been widely used in folk medicines and perfumes as well as in food flavor and preservatives and are more commonly utilized in chronic diseases like cancer, diabetes and asthma [1].

The ancient Egyptians have described several useful preparations such as opium and castor oil. They also used "rotten bread" for treating infections which resembles our use of antibiotics from moulds and fungi [2].

The Chinese are considered as leaders in using natural products for healing. The oldest compilation of Chinese herbs is 'Shen Nung Pen Ts'ao', which lists 385 materials, 5267 medicinal herbs were used in China in 1967. One of the most famous herbs among them is the ginseng root. *Panax ginseng* is used for health maintenance and for the treatment of various diseases. Another popular folk drug is the extract of the *Ginkgo* tree, *Ginkgo biloba* which can improve memory and mental alertness [3-7].

During the 17$^{th}$ century, the Jesuit brought with them from South America the bark of the China tree for the treatment of malaria. In 1820, Pelletia and Caventou isolated from the China tree the active compound, quinine. American-Indians used the powerful hallucinogen, mescaline for a long period. The Indian hemp plant, *Cannabis sativa*, is being used since 3000 BC, and still used as marijuana or hashish [8].

Interest in alternatives to modern medicine was never been higher than it is now, and a large part of that interest revolves around the use of medicinal plants. Human beings have been dependent on plants for their health care needs since the beginning of civilization. Of the 2,50,000 higher plant species on earth, more than 80,000 are medicinal in nature.

About 5000 species are extensively used in traditional systems of medicine and are studied in some detail[9]. India has one of the richest ethno botanical traditions in the world with more than 7000 species of plants found in different agro-ecosystems and are used by various indigenous systems of medicine and industries. The plant parts utilized in medicines can be root, wood, bark, whole plant, fruit/seed, flower or leaf. Different types of chemical compounds are extracted from various parts of the

plants. Some of the compounds have medicinal properties and some are economically important.

Pharmaceutical research of several countries looking towards plant based agrochemicals and botanical pesticides. Eastern Himalayas is rich in flora constituting of many important plants having medicinal value. The tribal medicinal practice in the above region provided the evidence of the utilization of medicinal plants by the local people as a folk lore.

Triterpenoids (members of terpenoid family) having a C30 skeleton also called isoprenoids is a large and diverse class of naturally occurring organic chemical. Like terpenes, triterpenoids may be derived from five carbon isoprene units [10]. There are several ways of assembling and/or modification of isoprene units for preparation of derived triterpenoids. Some of the triterpenoids (member of Terpenes) have established medicinal properties. Terpenes are a large and varied class of hydrocarbon, produced primarily by a wide variety of plants, particularly conifers, though some insects such as termites, swallowtail, butterflies, etc. emit terpenes.

Because of the considerable proven range of medicinal properties the triterpene skeleton is the prime attraction of pharmaceutical industries. In the present work three medicinal plants (*Xanthoxylum budrunga*, *Bischofia javanica* and *Quarcus suber*) have been selected for extraction of triterpenoids, preparation of the suitable derivatives of the isolated compounds and to study the antimicrobial activity associated with them.

Considering the importance of the antimicrobial properties of triterpenoids and its derivatives the following objectives were taken into consideration in the present study.

1. Isolation and Characterization of natural terpenoids from selected plants of proven antimicrobial activity.
2. Preparation of some derivatives of the isolated terpenoids and their characterization.
3. Bioassay of the natural and derived triterpenoids against some important pathogen of economically important plants.
4. *In vivo* assessment of selected potential triterpenoids for their antimicrobial activity.

In concord with the line of the objectives stated above a review of literature was performed. The review was a selective one rather than a comprehensive and have been presented in chapter-I. Following chapter-I, Chapter-II deals with the isolation, characterization and bioassay of triterpenoids extracted from *Xanthoxylum budrunga.* Chapter-III also deals with the isolation, characterization and bioassay of triterpenoids extracted from *Bischofia javanica.* Chapter IV deals with isolation, characterization and preparation of two antimicrobial derivatives from the plant *Quarcus suber*, an herb commonly called Cork Oak, belongs to the family Fagaceae (Beech family).

* The scientific name of *Xanthoxylum budrunga* is changed to *Zanthoxylum budrunga.*

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