

PREFACE

Natural products are viable sources and resources for drug discovery and development. The continual emergence of new natural product with novel chemical structures, various biological activities along with the potential for chemical modification and synthesis bode well for the utility of natural products as lead molecules in drug discovery.

Like the combinatorial chemistry, nature itself presents the most diverse and complete source of leads. According to the new approach that unites the strengths of combinatorial chemistry and natural product identification in a process, referred to as combinatorial biosynthesis, in which a natural product is identified and the genetic basis of it is elucidated and modified to produce different biologically active products of therapeutic potency. Combinatorial biosynthesis utilizes enzymes from various natural product source biosynthetic pathways to create novel chemical structures.

Herbs and herbal medicine have been an integral part of our health care for centuries and will continue to develop and expand in our future health care system. Sikkim is a small state, has the highest biodiversity and harbors approx. 4000 vegetal species that encompass enormous therapeutic potential. In this context, these study protocols, aimed at testing for safety and pharmacological efficacy of the plants used in traditional system of medicine may be the cornerstone of modern and rational drug development.

The work embodied in this thesis is a humble and sincere effort to explore and screen three ethnomedicine *Urtica parviflora* Roxb., *Callicarpa arborea* Roxb. and *Morinda citrifolia* Linn. used by traditional healers of Sikkim in their health care. The finding of this investigation revealed that the crude extracts of these plants are very useful as anti-inflammatory, antipyretic, hepatoprotective, antioxidant, antimicrobial and hypoglycemic agents. The constituents of these plants were isolated and purified, analyzed the chemical structures of the pure compounds as well as their activities were evaluated.

The thesis has been segregated into 10 well-defined chapters and finally a summary and conclusion has been drawn along with the summary of the whole work. At the end of each chapter the necessary references have been enlisted. The investigated work deals with a scientific approach to explore the pharmacological activities of the compounds isolated from *Urtica parviflora*, *Callicarpa arborea* and *Morinda citrifolia*, three ethnomedicinal plants from the Sikkim Himalayan region. As the ethnomedicinal uses of these plants have been validated scientifically, these can be utilized against various diseases in a cost effective manner and also as a basis for further scientific study.