CHAPTER 7

SUMMARY & CONCLUSION

7 Summary and conclusion

Plants have long been a well-known treasure trove of potential bioactive natural products. Given the possibility of obtaining drug-like natural products and their analogues as therapeutic moieties, it is necessary to rummage through unexplored plant species. Though the thrust for novel compound discovery continues, the geographical distribution of some plant species remains a challenge in such exploitation. For instance, in the case of *N. herpeticum*, only a few reports are available from India and Nepal, which is unfortunate. The quality and purity of the plant material were affirmed by DNA barcoding analysis and quality control assessment. The aqueous extract of the plant demonstrated no toxicity, when consumed for a short period of time and in low doses. However, repeated administration of high doses (2000 mg/kg) may have a deleterious effect on organs, particularly the liver. Nonetheless, to further establish the toxicity profile of the plant, a chronic study is needed. In the present study, the antibacterial activity of *N. herpeticum* was validated using in silico and in vitro approaches. It was found that the plant possesses bacteriostatic activity against bacterial infections, particularly Gram-negative bacteria. The compounds present in the extract may modulate pathways involving IRAK4 and TNF signalling. Moreover, HME was determined to be a possible antibacterial compound that needs in depth investigation. However, further analysis of the extract as well as HME against other bacterial strains will provide more insight into the findings. In addition, the potential anti-inflammatory property of the plant extract was predicted by using the network pharmacology approach and was consistent with the positive results of in vitro and in vivo experiments. As inflammation is associated with a myriad of diseases or conditions, studies emphasising particular diseases or conditions will aid in understanding the possibility of the clinical utility of the extract and its components, which will remain as our long-term goal.