Chapter - VI

Summary
SUMMARY

The antimicrobial drugs are indispensable remedy for treating bacterial, viral, fungal, protozoal and helminthic diseases. Worldwide, the increase of infectious diseases often calls for development of some more suitable antimicrobials to meet the need of the present millennium, specially for the cruel hurts of drug resistant bacteria, virus including AIDS and other emerging diseases. Since no antibiotics of the present millennium have the capacity to kill or inhibit such type of entities, the search and use of plant antimicrobial are enjoying great popularity in the present deacade and the scientists from the pharmaceutical world are trying to develop “Third Generation” plant antimicrobials on clinical trials of ethnomedicine as alternative remedies for treating infectious diseases. The present investigation is aiming to strengthen Assamese traditional culture on food items and food habit. The extracts of 104 mostly food items of Assamese people have been screened against 10 different micro-organisms to find their antimicrobial activities by disc diffusion and tube dilution procedure. Out of 104 selected plants, 67 revealed gradient level of antimicrobial properties. Six (6) of them showed high level of antibacterial properties while only 3 showed medium and 58 were found to have low antibacterial activity. Low activity was recorded against S. enterica gallinarum and A. arginosa. The results indicate that 41.79% of antibacterial plants are inhibitory to E. coli and S. pyogenes, 40.29% to P. aeroginosa and P. multocida,
37.31% to *S. aureus* and *Cl. perfringens* while 35.82% to *B. anthracis*, 29.85% to *S. enterica gallinarum*, 13.43% to *D. pneumonae* and 9.40% to *A. arginosa*.

*C. asiatica* (Bormanimuni), *G. kydi* (Kujithekera), *S. pinnata* (Amora), *C. maxima* (Rongalau), *P. guyava* (Modhuriam) have been reported to have antibacterial activities for the first time and the result of this present investigation appears to be the first-hand information for further study in details.

The polar sub-fraction of the *S. pinnata* (Amora) was found to have potent antibacterial activity with minimum inhibitory concentration (MIC) ranging in between 2.5 to 5.0 mg/ml against the 10 test micro-organisms namely *E. coli, S. enterica gallinarum, S. pyogenes, S. aureus, P. aeroginoa, Cl. perfringens, B. antheasis, P. multocida, D. pneumonae* and *A. arginosa*. Safety test performed on mice, rabbit, calves and chicks yielded satisfactory result (upto 5 g/kg b.wt.) and toxicity studies on cell line (PL-15) was found have no toxic effect. Potency test performed on mice against *Diploccocus* have shown to protect mice at MIC value equivalent to 0.025 mg/kg body weight while challenged test performed on chicks as drinking supplement @ 2.5 mg/ml was found have challenging potency and use of the polar sub-fraction on clinical cases of diarrhea, cuts, wound and nail infections yielded satisfactory result.
Although some reports are available on the composition of *S. pinnata* (Amora) fruits, but reports on its antimicrobial activities are largely lacking. The results reported in this present study is appeared to be the first information on the antimicrobial properties of *S. pinnata*. Further studies are needed to evaluate the availability of antimicrobial compounds in the polar sub-fraction of the fruits of *S. pinnata* together with *in vivo* potentials of these compounds in animal models followed by detailed biochemical and pharmacokinetic study in animals.

Traditional Assamese food habits have medicinal value in addition to its nutritive ones. Development of ethnomedicine is a call for safeguarding lives from the microbial attack and development of 3rd generation of plant antimicrobial either from *S. pinnata* alone or with combination of *P. granatum*, *C. asiatica* and *P. guyava* have value for growth of pharmaceutical industry in the north Eastern region.