



Antimicrobials of Plant Origin - The Future Phytomedicine Market

Rajesh Singla*

Associate Professor - Microbiology and Head, Agriculture Department, S.S.D. College of Professional Studies, Goniana Road, V.P.O. Bhokhra, Bathinda, Punjab, India

***Corresponding Author:** Rajesh Singla, Associate Professor - Microbiology and Head, Agriculture Department, S.S.D. College of Professional Studies, Goniana Road, V.P.O. Bhokhra, Bathinda, Punjab, India.

Received: November 21, 2019; **Published:** December 09, 2019

DOI: 10.31080/ASMI.2020.03.0452

Diseases are as old as mankind and have been a major concern since time immemorial. Worldwide infectious diseases, along with nosocomial and community based infections as well as drug resistant microbes has resulted in increased deaths and had hard hit on the pockets of the people. This is in spite of the developments and achievements made in the field of microbiology and related fields along with the control on microbial activities. The recent appearance of microbial strains with reduced or no susceptibility to latest antibiotics raises the spectrum of untreatable bacterial infections and adds urgency to the search for new infection fighting strategies. Various natural remedies from traditional systems practiced in various parts of the world were added to enrich this practice and all of these stressed on plants or plant based formulations. Plants possess natural curing properties due to the presence of various antimicrobial substances called secondary metabolites which they develop *in vivo* for their self defense. Contrary to the synthetic drugs, plant based antimicrobials have very less or no side effects and has the potential to inhibit the growth or kill the micro-organisms. The possible mechanism of action is by either altering the physiological and metabolic reactions and processes at any stage or by interfering at the genetic level.

Plant based medicines serve two important roles first for the treatment of a disease as a phytomedicine and second for the development of a new drug. Screening of these plant based antimicrobials in a systematic way therefore may result in the discovery of a novel effective compound. Phytomedicines not only treat for the symptoms of a disease but have several effects on a person for example *Thevetia neriifolia* has anti-microbial activity as well as exhibits cardio tonic activity similar to ouabain (a cardiac glycoside). *Rauwolfia serpentina* has both antimicrobial as well as anti-arrhythmic properties. Therefore, the use of synergistic activity of extracts or purified compounds obtained from plants for the purpose of treatment has emerged as an area of great interest in the medical and scientific community.

Pharmaceutical companies are engaged in the development of drugs from natural product by the isolation of active molecules or

compounds from the different extracts of various plant parts. The development of pharmaceutical compounds involves identification of the active lead biomolecules through antimicrobial assays as well as detailed biological assays and formation of correct dosage forms followed by various clinical trials and studies to access the safety levels, effectiveness and the detailed pharmacokinetic profile of the new drug. If there would be any viable influence on the food or any other medications it would be clearly ascertained from the clinical trials conducted. Thus the development of a new plant based therapeutic agent involves various steps of which first include assessment of the treatment methods practiced by the traditional folklore communities or doctors. Further, studies involve the treatment results in animal models and then cell toxicity analysis. If the molecule or a compound is found to be safe, then biochemical studies or pharmacological assay is done to confirm the same which helps in the formulation of the final dosage forms.

Growth and cultivation of plants possessing bioactive compounds or antimicrobial properties needs to be emphasized and promoted to meet the demands of the pharmaceutical companies engaged in the development of plant based medicines and to develop a new herbal industry leading to various jobs and playing a major role in the development of economy. This market thus offers many opportunities for those cultivating new crops. Therefore efforts to cultivate and study such plants is vital as these not only provide environmentally responsible solutions to public health concerns presented by new trends in diseases but also important to capitalize on the phytomedicine market.

Volume 3 Issue 1 January 2020

© All rights are reserved by Rajesh Singla.