

Project Title: Identification and application of new antimicrobial agents from the mangrove forests of Bangladesh:

Abstract:

Natural products from plants provide unlimited opportunities for discovery of new drugs (pharmaceuticals). Plants such as herbs have been used in natural medicine for centuries in most of the cultures throughout the world. Natural products from plants either as crude extracts or as pure compounds, have unlimited opportunities for discovery of new pharmaceuticals because of the unmatched availability of chemical diversity. Mangrove forest of Bangladesh, which is also known as Sundarbans, has an enormous variety of plants with versatile medicinal properties. The economical uses of products from mangrove ecosystems are many and varied. Extracts and chemicals from mangroves are used mainly in folkloric medicine as insecticides, antimicrobial and pesticides and these practices continue to this day. Many journals revealed that handsome amounts of species in the mangrove forest have medicinal values, and it has been proved that these plants are antiviral and antibacterial in nature because of the presence of high tannin content. Bandaranayake et al. (2002) indicated that mangrove plants are a rich source of steroids, triterpenes, saponins, flavonoids, alkaloids and tannins in which tannins play a vital role as an antimicrobial agent. A large amount of revenue of the world has to pay for the health care. Day by day new dreaded diseases are rising and antibiotics are being used without proper protocols. The rise of antibiotic resistant microorganisms is therefore one of the severe problems in health care systems of the world and infectious diseases are the second most serious cause of death worldwide especially in Bangladesh. There is a clear relationship between the amount of a given antibiotic used and the incidence of bacterial resistance. Resistance to commonly used antimicrobial drugs is remarkably high in countries where antibiotics are not restricted. Increasing rates of antimicrobial resistance have left clinicians with limited drug options for the treatment of bacterial infectious diseases. This is a major public health concern worldwide, especially in developing countries where higher rates of resistant bacterial infections persist. Through our research, we want to identify new antibacterial agents from the largest and cheapest source of Bangladesh-Sundarbans. It is quite possible that if we can identify and isolate new compounds for treating bacterial diseases, it will certainly be beneficial for the poor people of Bangladesh. The new molecules will be cheaper in price because the pharmaceutical industries will be able to culture and isolate the molecule in their premises, no more importing cost for the antibacterial drugs. But, it is a great matter of regret that there are not enough designed experimental models for such type of research. Dr. Ahmed Mostafa, a world-renowned professor of Indiana University-Purdue University Fort Wayne (Purdue University Fort Wayne Campus), USA, USA, has concern in prevention of diseases with alternatives to drug therapy. We found a great amount of similarity in our interest as his research

includes designing the experimental model for understanding the physiology of disease (infection) in animals and modulation of their disease resistance using natural products (nutraceuticals). He has shown interest in this proposed work and will allow me in his lab for 2 months for learning the techniques and methods I needed to conduct the research. If the proposed research were conducted, it will increase the quality of common people of Bangladesh, reduce the overall treatment cost and contribute a significant contribution in the socio-economic context of Bangladesh.