

## Science and Applications of Natural Products and Chemistry

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### EDITORIAL

Natural Products Chemistry & Research deals with chemical compounds found in nature that sometimes features a pharmacological or biological activity to be used in pharmaceutical drug discovery and drug design. Natural Products Chemistry & Research emphasizes articles associated with the study of chemistry and biochemistry of present compounds or the biology of living systems from which they're obtained.

This approach has yielded success with numerous samples of drugs employed in orthodox medicine, including aspirin, atropine, artemisinin, colchicine, digoxin, ephedrine, morphine, physostigmine, pilocarpine, quinine, quinidine, reserpine, taxol, tubocurarine etc, discovered with history of use in traditional medicine as a lead. A number of medicine with enhanced efficacy and safety have also been developed by structural modification of identified phytochemicals.

The reality on ground is that upsurge in patronage coupled with sustained and rigorous publicity as being "completely safe" has generated understandable concern on the safety of herbal remedies and derived phytochemicals.

Ergot alkaloids and other mycotoxins are secondary metabolites produced by endophytes that infect such grasses as tall fescue and perennial ryegrass. Cattle consuming these grasses will exhibit severe heat stress with moderate air temperatures, have imbalances in their endocrine systems, and have reduced growth and reproductive performances. An annual cost of over 2 billion dollars to global food animal production are often attributed to negative impacts of ergot alkaloids alone. Although they're not produced by the plants, they're going to be examined because their source is thru a symbiotic relationship between endophytes and grass plants.

Plants must deal with and adapt to increasing environmental variability at multiple spatiotemporal scales. Plant resilience and adaptation to a constantly evolving climate may result in highly regulated mechanisms of plant physiology and chemical defence (i.e. primary and secondary metabolism). Particularly, the evolution of varied metabolic pathways resulting in volatile organic compounds (VOCs) biosynthesis has equipped plants

with a good array of versatile metabolites to affect multiple environmental stressors. The chemical 'raison d'etre' of VOCs, traditionally acting as crucial infochemicals in mediating multitrophic interactions, can actually be extended, even to an antioxidant action of some terpenoids to mitigate oxidative stress.

We welcome the submission of manuscripts related, but not restricted to the following topics:

New agricultural biotechnologies: current and future

The regulation of agricultural biotechnologies

Consumer perceptions and attitudes towards biotechnologies

Impacts, advantages and innovations in agricultural biotechnology

The environmental implications of agricultural biotechnology

### Chemistry of biofilms:

Biofilms are structured microbial communities of surface-attached cells embedded in a self-produced matrix of extracellular polymeric substances (EPS) composed of proteins, lipids, nucleic acids, polysaccharides, and other components. They are ubiquitous in our society and are associated with a large number of serious diseases and conditions that affect human health. In fact, bacteria in biofilms are often more resistant to traditional antimicrobial drugs which makes them a very serious health risk, particularly due to their association to antibiotic resistance.

Some of the innovative research topics by the Eminent author in our Journal is

Martin et al, describes the Interaction of Metal Ions with Mono- and Polysaccharides for Wastewater Treatment: A Review which explains about the Chemical contamination of water from a wide range of toxic compounds, especially heavy metals, is a critical environmental problem due to their potential human toxicity. Therefore, development of technologies that allow the removal of toxic pollutants from wastewater is a need. Among all the common heavy metals treatment processes, biosorption is one of the more popular and efficient processes. The important

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number of publications concerning adsorption and remediation of metal ions from aqueous solution by natural and modified polysaccharides shows an increasing interest in biopolymer uses for environment preservation. The present review describes recent developments on biosorption processes using agricultural by-products, mainly mono- and polysaccharides extracted from

natural resources. General considerations on metal ions complexation mechanism and interactions between metals and saccharides are first described. Then, a review on metal ions biosorption processes and recent development of new polysaccharide-based materials is carried out and shows their high adsorption capacities and their attractive character.