

Exploiting nature for therapeutic interventions to alleviate human diseases

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PLENARY LECTURE

Natural products have provided considerable value to the pharmaceutical industry over the past half century. Many natural products and synthetically modified natural product derivatives have been successfully developed for clinical use to treat human diseases in almost all therapeutic areas. In particular, the therapeutic areas of infectious diseases and oncology have benefited from numerous drug classes derived from natural product sources. Natural products are secondary metabolites of plants and microbes. These secondary metabolites are interpreted to be signaling molecules that assist in maintaining survival and protection against various infectious and chronic diseases. They also serve as biochemical tools that can be used to elucidate the role of specific signaling pathways in diseases. In addition to the natural products which have found direct medicinal application as drug entities, many others can serve as chemical models or templates for the design, synthesis, and semi synthesis of novel substances for treating humankind's diseases. Natural product research has enormous yet unexploited potential, and describes the important advantages and disadvantages of natural product derived molecules as drug candidates for development. Unfortunately, pharmaceutical companies have significantly decreased activities in natural product discovery during the past several years. Despite what appears to be a slow death of natural product discovery research, many new and interesting molecules with biological activity have been published in the past few years. If natural product materials continue to be tested for desirable therapeutic activities, we believe that significant progress in identifying new antibiotics, oncology therapeutics and other useful medicines will be made.