



New Drugs from Natural Products around the World

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In recent years, many new drugs have reached the market to treat a wide array of diseases and conditions that plague human existence, but there is still a vast need for new drug discovery. A major focus of our research efforts should be on the great potential^{1,2} to find new drugs from natural sources, including phytochemicals and secondary metabolites from terrestrial and marine organisms around the world. Natural products continue to be a major source of new and structurally diverse leads. Many currently marketed drugs have natural-product origins. This type of research has the potential to benefit all.

Effective research on natural products requires unfettered access to source materials. Limits on access to natural products or, worse yet, extinction of the natural product's source species itself greatly hinder this research. For instance, war and laws can block access to certain countries, making sourcing of natural products dangerous or impossible. It is necessary and important to work with governments to make sure that laws are followed and that correct credit is assigned for any discoveries made. Extinction is the greater threat because it is permanent.² While extinction is a natural biological process, with a natural ebb and flow that can lead to species loss, extinction of natural species has been greatly accelerated by human intervention (due to pollution, mining and other resource-harvesting, excess harvesting, introduction of invasive species, slash-and-burn agriculture, industrialization, and forest destruction). Further, anthropogenic climate change (i.e., "global warming") is also predicted to lead to the extinction of species.

In considering how best to protect endangered species, each geographic region needs to make their own unique contributions, because there is such a variety in the species specific to particular regions of the world. Both this quest to protect natural products and fundamental research on them need to be financially supported; this financial support should primarily come from governments, because they are best positioned to have long term goals of care for their people.

Much research is going on in this direction, some in this journal³⁻⁷ and much more in leading journals

around the world. Recent findings also recognized the significant numbers of drugs or leads isolated from natural products but produced by the microbes that live in them and/or by microbial interactions with the hosts⁷. In some cases, exploratory research has been done,³ to lay the groundwork for further research to identify individual molecules with bioactivity, to clarify their range of bioactivities, and to progress towards new drugs. The natural products themselves or natural-product derived analogs are a tremendous resource for discovery of new drugs. Natural products research will continue to remain popular because natural products have shown high commercial value due to their unique and great biodiversity, advantageous pharmaceutical properties such as reduced or no toxicity profile, and potential for synergistic effects.

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