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New and bioactive compounds from Hawaiian microorganisms

The Hawaiian Islands are the most remote dry land on earth. They are located almost 2,400 miles from California, 3,800 miles from Japan, and 2,400 miles from the Marquesas Islands, from which the first settlers arrived in Hawaii around 300-400 AD. The natural resources of Hawaii are unique due to its mid-oceanic environment with ecologically rich habitats, which present a wide variety of terrestrial ecosystems including tropical rain forests, coastlines, and marine life. From literature and unpublished sources, approximately 21,383 species have been recorded from the Hawaiian Islands and surrounding waters, of which 8,759 are endemic to the Hawaiian Islands and 4,532 are nonindigenous species. Of these, approximately 15,000 species are terrestrial, 300 are found in freshwater, and 5,500 are marine-inhabiting. Literature search also revealed that Hawaiian microorganisms, especially marine and endophytic fungi are under-explored. Investigation of Hawaiian fungi isolated from marine and plants led to the discovery of many new and diverse molecules, for examples peyronellins and paraphaeosphaerides.

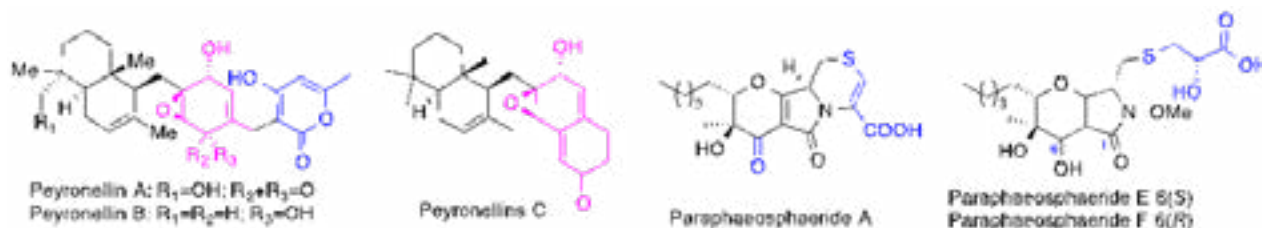


Fig. 1. Some new compounds isolated from Hawaiian endophytic fungi

Biography

Shugeng Cao has his expertise in biologically active natural products from different sources, initially from plants, then from fungi and bacteria, and lately more on marine microorganisms. Besides drug discovery from natural sources, he is also interested in investigating the functions of small molecule natural products and studying secondary metabolites in the fields of ecology and agriculture. At the Cancer Center and Daniel K. Inouye College of Pharmacy, University of Hawaii, his lab has collected about 300 bacterial and about 3,000 Hawaiian fungal strains from soil, marine and plants (called endophytes), and established a natural product library with more than 5,000 semi-pure fractions. In the past few years, Cao Lab has isolated more than 50 new natural products, some of which have new structure skeletons and showed good anti-proliferative activity.

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