

Exploiting Floridian Marine Cyanobacteria for Drug Discovery

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Introduction

There is an urgent need to identify novel active chemotypes and pharmacophores as leads for effective drug development in many therapeutic areas. Our research is based on the hypothesis that marine cyanobacteria are a potential source of novel bioactive compounds. Florida harbors possibly the most marine biodiversity in the continental United States, and therefore there is a high probability of discovering novel and intriguing structures.

Experimental

^1H , ^{13}C , and 2D NMR spectra were recorded on Bruker Avance NMR spectrometers (500 MHz, 2.5 mm probe; 600 MHz, 5 mm probe) or Bruker Avance II 600 MHz spectrometer equipped with NMF Lab's 1 mm HTS cryogenic probe.

Results and Discussion

Marine cyanobacteria of the genera *Symploca* and *Lyngbya* were collected off the coast of Florida, extracted and scrutinized for compounds with biomedical utility. *Lyngbya confervoides* from Grassy Key afforded a novel cytotoxin, grassypeptolide, while *Lyngbya confervoides* from the Ft. Lauderdale area yielded pompanopeptin B, a putative carboxypeptidase inhibitor (Fig. 1). A collection of *Symploca* sp. from Key Largo yielded largazole, a cancer selective agent with nanomolar activity and unusual structural features, such as a thioester moiety (Fig. 1). Largazole is a prodrug that, upon thioester hydrolysis, yields the active compound which inhibits class I histone deacetylases (HDACs) (Fig. 1).

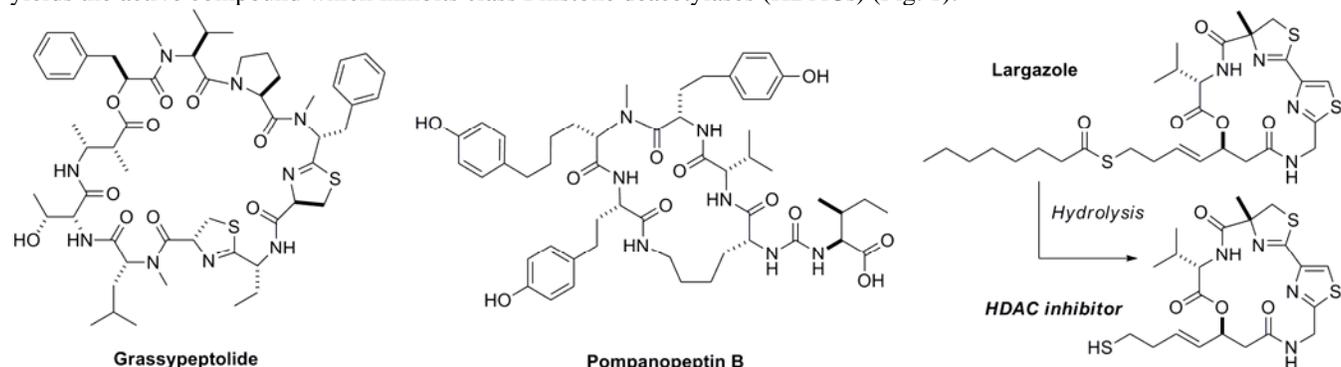


Fig.1. Structures of grassypeptolide, pompanopeptin B and largazole and its conversion to the reactive species.

Conclusions

Cyanobacteria continue to yield new bioactive metabolites.

Acknowledgements

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References

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