

## Chemical and Pharmacological Study of the Sponge *Plakortis anguloperculatus* from the northeastern coast of Brazil.

Amanda L. Quintela (IC)<sup>1</sup>, Evelyne A. Santos (PG)<sup>2</sup>, Elthon G. Ferreira (PG)<sup>3</sup>, Thiciana S. Sousa (PQ)<sup>1</sup>, Francisco das Chagas L. Pinto (PG)<sup>1</sup>, Maria da Conceição M. Torres (PQ)<sup>1</sup>, Edilberto R. Silveira (PQ)<sup>1</sup>, Otilia Deusdênia L. Pessoa (PQ)<sup>1</sup>, Letícia V. Costa-Lotufo (PQ)<sup>2</sup>, Paula Christine Jimenez (PQ)<sup>3,4</sup>

<sup>1</sup> Departamento de Química Orgânica e Inorgânica, Universidade Federal do Ceará, Fortaleza, CE, 60.021-970, Brazil.

<sup>2</sup> Departamento de Fisiologia e Farmacologia, Universidade Federal do Ceará, Fortaleza, CE, 60.430-270, Brazil.

<sup>3</sup> Instituto de Ciências do Mar, LABOMAR, Universidade Federal do Ceará, Fortaleza, CE, 60.165-081, Brazil.

<sup>4</sup> Departamento de Ciências do Mar, Universidade Federal de São Paulo/Baixada Santista, Santos, SP 11030-400, Brazil.

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### Introduction

Sponges are one of the most relevant sources of bioactive compounds from the marine environment. Since the isolation of the arabinonucleosides from *Cryptothetya crypta*, those marine organisms have provided thousands of secondary metabolites, many of which are under preclinical evaluation or clinical status for drug development.<sup>1</sup> Sponges from the genus *Plakortis* are typically recognized as sources of cyclic endoperoxides containing five- or six-membered rings,<sup>2</sup> which are known to retain antiparasitic, antimicrobial and anticancer activities<sup>3</sup>. This work describes the chemical and pharmacological study of the crude extract from specimens of *Plakortis anguloperculatus* collected from the northeastern coast of Brazil.

### Results and Discussion

The ethanol extract of *P. anguloperculatus* was subjected to several fractionation columns of silica gel, followed by HPLC analysis (semi-preparative normal phase) culminating in the isolation eight compounds. The structures of all compounds isolated were determined using a combination of HRESIMS, IR and 1D/2D NMR spectroscopy. Thus, the structures of the compounds were determined as: 7,8-dihydroplakortide E (1), 6-*epi*-plakortide H (2), 6-desmethyl-6-ethyl-spongisoritin A, 6-desmethyl-6-ethyl-spongisoritin-9,10-dihydro-spongisoritin A, spongisoritin A, 9,10-dihydro-spongisoritin A and

11,12-dihydroplakortide P. Compounds 1 and 2 are new (Figure 1). The isolated compounds were evaluated in vitro against a panel of human tumor cells. All compounds, with the exception of 1 (inactive), were active against both tumor HCT-116 and PC-3M cells, with IC<sub>50</sub> values ranging from 0.2 μM to 92.1 μM.

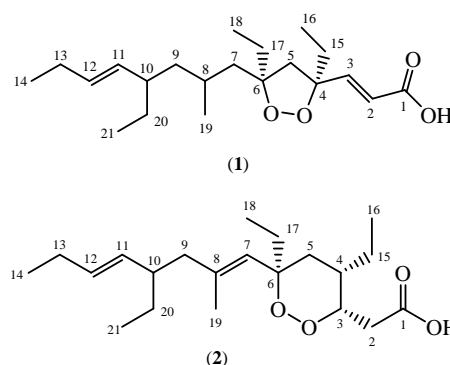


Figure 1: Structures of the new compounds isolated from *P. anguloperculatus*.

### Conclusion

The chemical prospection of the marine sponge *P. anguloperculatus* allowed the isolation and structural elucidation of eight plakortides, two of which are new, 7,8-dihydroplakortide E and 6-*epi*-plakortide H. The cytotoxic activity assays of the isolated compounds showed very promising results, emphasizing the pharmacological potential of this class of natural products.

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