



CYTOTOXIC NOR-ERGOSTEROID OF THE ZOANTHID *Palythoa variabilis* FROM THE NORTHEASTERN COAST OF BRAZIL

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Abstract:

Among Cnidarians, the soft bodied sessile coral zoanthids is one of the most prolific source of compounds showing biological activities. This study aimed at the investigate the cytotoxic activity of the extract from the zoanthid *Palythoa variabilis* collected at Paracuru beach (3°24'0.22"S and 39°0'48.60"W), on the west coast of Ceará state. The zoanthid *Palythoa variabilis* was hand collected at the intertidal zone during low tide, washed with sea water and then stored under refrigeration. A voucher specimen (N° 000975) identified by Dr. Antonio Carlos Marques have been deposited at the Zoological Museum of the University of São Paulo. The sample was cut in small pieces and extracted with n-hexane for 24 h at 4°C. Then the extract was filtered and evaporated under reduced pressure at 40°C to yield 19.8 g. The compound **1** (28.3mg) was isolated after chromatography on silica gel column followed by high performance liquid chromatography. Through analysis of compounds by spectroscopic techniques, including 1D and 2D NMR, HRESIMS and comparison with published data, the compound **1** was identified as the new steroid 24(R)-B-norergostan-3 β -5 β -diol-6 β -carboxyl acid. This kind of ergostan steroid C₆-C₅-C₆-C₅ are rare in the nature, but same few examples can be found, including from marine species, like from the sponges *Stelletta hiwasaensis* [1] and *Svenzea zeai* [2]. The cytotoxic activity was assessed by the MTT assay against the human colon adenocarcinoma cell line HCT-116 after 24 and 72h. **1** showed a strong time dependent cytotoxic profile. The inhibition concentration mean (IC₅₀) values were 39.5 and 4.0 uM after 24 and 72h treatment respectively. Compound **1** is related to orostanal, these ergostan sterols show moderate cytotoxicity as we observed in our studies. Some papers reported showed orostanal derivatives apoptosis induction. Further investigation of this cytotoxic effect was carried using flow cytometry studies. Compound **1** reduced the cell density and slightly increased the number of non-viable cells, however it did not induced apoptosis nor chance membrane integrity unexpectedly. Moreover, it does not induced DNA fragmentation nor cell cycle alterations. Studies are advancing towards the investigation of the mechanism of action of **1**. Nevertheless, the results herein emphasize that the coast of Ceará is a promising source of marine natural products with biomedical applicability.

References:

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