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I ENCONTRO IBERO-AMERICANO DE PLANTAS MEDICINAIS DR. MAHABIR GUPTA
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CHEMICAL CONSTITUENTS OF *Aplysina fulva*, A MARINE SPONGE WITH POTENT AND SELECTIVE ANTIPLASMODIAL ACTIVITY

Uesley V. Alves[1]*, Edson B.J. Silva[1], Emílio Lanna[1], Roberto G.S. Berlinck[2], Ronan Batista[1]

[1]Universidade Federal da Bahia, Brasil. [2]Universidade de São Paulo em São Carlos, Brasil
**uesleyvieira@outlook.com*

INTRODUCTION

Malaria continues to be a major global health problem. Although this disease is caused by five *Plasmodium* species (*P. falciparum*, *P. vivax*, *P. knowlesi*, *P. ovale* and *P. malariae*), *P. falciparum* is responsible for the most severe malaria and causes most of the malaria-related deaths globally. In 2020, 95% of the estimated 241 million cases and 96% of the 627,000 deaths worldwide occurred in sub-Saharan Africa, affecting more severely children under 5 years old (WHO 2021, World Malaria Report). The modest advances in malaria control over the past two decades have stagnated due to the COVID pandemic reducing access to prevention and treatment, as well as the emergence and spread of drug resistance. Thus, novel therapeutic drugs continue to be urgently needed. Taking into consideration the historical contribution of natural products to drug development, our recent study (Alves et al. 2021, Int J Parasitol Drugs Drug Resist) evaluated the in vitro antiplasmodial and cytotoxic effects of 26 extracts from nine marine sponges collected in Salvador, Bahia state, Brazil, and the results revealed that all assayed marine sponges were active against the *P. falciparum* W2 strain, being *Aplysina fulva* one of the most potent and selective sponges. For this reason, this species was selected for chemical study.

MATERIAL AND METHODS

The first approach was to submit the dichloromethane extract (DCM) obtained previously from *A. fulva* (Alves et al. 2021, Int J Parasitol Drugs Drug Resist) to preparative Thin Layer Chromatography (TLC) fractionation. Taking a different approach, this marine sponge was collected again at Porto da Barra's beach, in Salvador, Bahia, Brazil, following the same cleaning and milling procedure. At this time, however, the material was exhaustively extracted with methanol (MeOH), followed by extraction with ethyl acetate (AcOEt). Then, both extracts were pooled and evaporated, and the residue was suspended in water and partitioned with AcOEt (3x). The AcOEt phases were combined and evaporated completely, and the residue was suspended in MeOH and extracted with hexane (3x). The remaining MeOH phase was concentrated and subjected to a Sephadex column. One of the collected fractions was characterized as a pure compound under TLC analysis. The dereplication of other extracts and fractions is still in progress.

RESULTS AND CONCLUSIONS

From the first approach, both aplysterol and a mixture of aplysterol and 24,28-didehydroaplysterol were isolated from DCM and fully characterized by Nuclear Magnetic Resonance techniques. The second approach yielded the pure compound 3,5-dibromoverongiaquinol dimethyl ketal. All isolated compounds are potentially antiplasmodial compounds of *A. fulva* and, thus, they will be assayed against *P. falciparum* in due course.

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