In Vitro Screening of Marinoquinolines Compounds as Potential Antimalarial Target.

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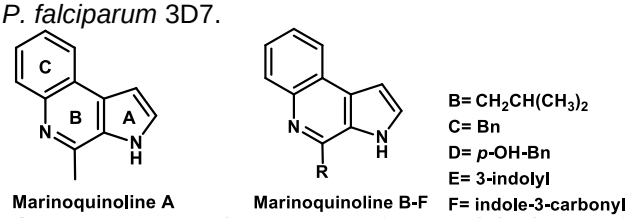
Abstract

Natural isolates of Marinoquinolines, pyrroloquinoline compounds were found to have antimalarial properties. In our collaborative study, we synthesized new derivatives from MQs by *Heck-Matsuda* and *Pictet-Spengler* reaction. Further we showed that these synthesized compounds possess antimalarial properties.

Introduction

Plasmodium, an etiological agent of malaria infect more than 400 million people with approximately one million global mortality rate annually. Emergence of resistant *Plasmodium* strains require urgent tackling for the development of new antimalarials.

Recently novel compounds, known as marinoquinolines A-F (MQs) were isolated from marine gliding bacteria *Rapid ithrix thailandica* and *Ohtaekwangia kribbensis*[1, 2]. It has been reported that these compounds also have antimalarial properties[3]. In this study we have synthesized 13 MQ analogues and studied their inhibitory activity against *P. falciparum* 3D7.



Marinoquinoline A Marinoquinoline B-F

Figure 1. General structure of natural isolates of Marinoquinolines (from Schwalm C.S. *et al*).

Results and Discussion

We selected different concentration range for all MQs analogues and tested their potential antimalarial properties against *P. falciparum.* Fig 2A represents the wide range of IC_{50} values for all MQs while figure 2B represent the typical dose–response curve for one synthetic MQs. Fig 2C specifically shows the structure of most active compounds with their respective IC_{50} values

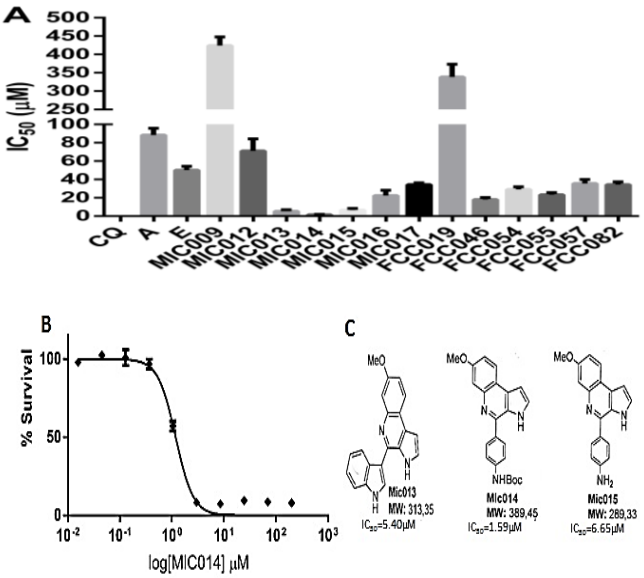


Figure 2. (A) *In vitro* inhibitory effect of natural and synthetic MQs. **(B)** typical dose-response curve to obtain IC_{50} for MQs on *P. falciparum*. **(C)** Structure and IC_{50} values of most effective MQs.

Conclusion

Our result showed that all the MQs are capable of interrupting the malaria life cycle. Among them, compounds MIC013, MIC014 and MIC015 possess lower IC_{50} value within 1-7 µM range.

Acknowledgment

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