ISOLATION OF PROTEINS FROM IN VITRO DENGUE VIRUS TYPE-2 INFECTED HEPG2 CELLS TREATED WITH NATURAL PURIFIED PRODUCT

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ABSTRACT

Dengue has been a global burden particularly to countries in tropical and subtropical region for several decades. Dengue virus infection is one of the most important arthropod-borne disease worldwide, with an estimated 50 million cases per year and 2.5 billion people are living in area with high risk of infection.

Dengue has a wide spectrum of clinical presentation. It may present asymptomatically, undifferentiated febrile illness (viral syndrome), dengue fever (DF), or in more severe cases it may feature as dengue haemorrhagic fever (DHF) including dengue shock syndrome (DSS). Patients with dengue may develop high grade fever with headache, maculopapular rash, myalgia, arthralgia, retoorbital pain and bleeding through orifices.

The effort in dengue control includes vector control and the most recent effort is the search for antiviral agents. Every step of the viral life cycle is a potential target for antiviral intervention. Non-structural proteins, NS3 and NS5 have been considered as the target for antiviral drugs. The interest of using natural product as an antiviral drugs has been growing dramatically especially in low income countries.

This study was based on the previous findings of the inhibitory properties of pinostrobin towards DENV2. Pinostrobin is a bioactive compound of *Boesenbergia Rotunda* plant which was found to inhibit DENV2 replication. We managed to establish the inhibitory activity of pinostrobin towards DENV2 *in vitro.* At concentration below than MNTD, pinostrobin showed a strong inhibition towards

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1.0 INTRODUCTION

GENERAL INTRODUCTION

Dengue diseases impose global health burden particularly to countries in tropical and subtropical region. Dengue virus infection is one of the most important arthropod-borne diseases worldwide with an estimated 50 million cases per year and 2.5 billion people living in area with high risk of infection (WHO 2012). Management of dengue is deprived in most countries and no existing model for predicting an outbreak in endemic regions is available (Romano et al., 2010).

Dengue is transmitted by the bite of infected female *Aedes* mosquito primarily of the *Aegypti* and *Albopictus* species which are widely distributed especially in tropical and subtropical region. The arthropod-borne disease is caused by dengue virus; a RNA virus of Flaviviridae family. The dengue virus exists as four antigenically distinct dengue viral serotypes; dengue virus type-1 (DENV1), dengue virus type-2 (DENV2), dengue virus type-3 (DENV3) and dengue virus type-4 (DENV4). It is an enveloped protein, consists of three structural proteins (capsid (C) protein, envelope (E) protein, and the membrane (prM) protein) and seven non structural proteins (NS1, NS2A, NS2B, NS3, NS4A, NS4B, NS5). Infection by one serotype provides long-life protection, but provides only a short time cross protective immunity against the other serotype causing secondary infection symptoms. This imposes major challenge in the development of a vaccine that can induce protective response against all four dengue virus serotypes. To date, there is no vaccine available for dengue.

The pathogenesis of dengue is still poorly understood because of lack of suitable animal model. However, researchs had shown liver involvement during dengue virus