



Research Article

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# Antibacterial and Cytotoxicity Studies of Barringtonia Asiatica



Isaac John Umaru<sup>1\*</sup>, Fasihuddin A Badruddin<sup>1</sup>, Zaini B Assima<sup>2</sup>, Hauwa A Umaru<sup>2</sup> and Dluya Thagriki<sup>3</sup>

<sup>1</sup>Faculty of Resource Science and Technology Sarawak, Federal University, Malaysia

<sup>2</sup>Department of Biochemistry, Federal University, Malaysia

<sup>3</sup>Department of Biochemistry Moddibo Adama University Science and Technology, Malaysia

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\*Corresponding author: Isaac John Umaru, Faculty of Resource Science and Technology Sarawak, Kuching, Federal University, Malaysia, Email: umaruisaac@gmail.com

## Abstract

**Objective:** The hexane leaf extract of *Barringtonia asiatica* has biological activity, however, the study was carried out with an objective to ascertain its effects on *Escherichia coli* (ATCC©25922), *Salmonella typhi* (ATCC©14028), *Staphylococcus aureus* (ATCC©25923) and *Klebsiella pneumoniae* and to evaluate the cytotoxicity of the leaves extract using brine shrimp lethality assay.

**Methods:** *Barringtonia asiatica* extract was evaluated for its antibacterial activity. Antibacterial activity assessment was performed by Disc diffusion assay the leaves of the plant were extracted with n-hexane, dichloromethane, ethyl acetate, chloroform and methanol and then vaporized to give respective extracts. Antimicrobial activity against *Escherichia coli*, *salmonella typhi*, *staphylococcus aureus* and *Klebsiella pneumoniae*, was determined. The optical density of the broth using UV mini spectrophotometer and zone of inhibition by the crude extract were determined.

**Results:** The results showed that of n-hexane extracts of varying concentration the 500ppm and 1000ppm displayed more activity with 4.00 ± 0.10, 4.30 ± 0.10b, 3.70 ± 0.10, 4.07 ± 0.12mm and 4.67 ± 0.12a, 4.35 ± 0.07a, 4.05 ± 0.07a, 4.55 ± 0.07mm respectively on all the pathogen subjected to the studies displayed where a significantly (p<0.05) higher compared to different extract at the same concentration b significantly (p<0.05) lower compared to the control, than others at 25-1000 ppm per disc of the extracts concentration tested. However, the result of the cytotoxicity showed that *Barringtonia asiatica* Leaf extract were toxic on brine shrimp larvae with LC<sub>50</sub> value of 208.091 when compared with the control 7.455 thus having toxicity when referred to the fact that LC<sub>50</sub> value of less than 1000µg/mL is toxic while LC<sub>50</sub> value of greater than 1000µg/mL is non-toxic.

**Conclusion:** The present results showed the potential of the medicinal plant used by traditional herbal medical practitioners as natural antimicrobial agents, thus can be further used to determine the bioactive products that may provide as leads in the development of new drugs.

**Keywords:** *Barringtonia asiatica*; Extract; Cytotoxicity; Antibacterial

## Introduction

Plants are important sources of medicinal products, they are recognized for their ability to produce a rich source of secondary metabolites and humans have long before now used many species to treat various kind of disease and ailment [1]. *Barringtonia asiatica* is a species of *Barringtonia* native to mangrove habitats on the tropical, it is a common plant in the Malaysian Mangroves and wetlands such as the Kuching wetlands Sarawak and Bako National Park,

It is also found in tropical Africa, Nigeria and Madagascar. Its large pinkish-white, pompon flowers give off a sickly-sweet smell to attract bats and moths which pollinate the flowers at night. It is grown along streets for decorative and shade purposes

in some parts of Sarawakian houses and it's also known as Box Fruit due to the distinct box-shaped of the fruit, it is a medium-sized tree growing to 7-25 m tall. [2,3].

The leaves are narrow obovate, 20-40 cm in length and 10-20 cm in width matured foliage colour is green, smooth glossy shiny leathery thick simple and evergreen. It is used as sausage food among the native of sarawakian in the kampong as well as a medicinal plant, inhabitants of several West African countries, Nigeria and the Polynesian Islands use liquid from the crushed bark of *Barringtonia asiatica* to treat chest pains and heart troubles. The same plant is used in Papua New Guinea to treat stomach-aches, the top leaves from this tree are squeezed into water and the liquid taken orally [4]. The plant when mature the