

**ISOLATION AND PURIFICATION OF DAMNACANTHAL AND  
NORDAMNACANTHAL FROM DICHLOROMETHANE  
FRACTIONS OF ROOTS OF *Morinda citrifolia* AND ITS  
NEUROTOXICITY AND NEUROPROTECTION EFFECTS**

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## ABSTRACT

### **ISOLATION AND PURIFICATION OF DAMNACANTHAL AND NORDAMNACANTHAL FROM DICHLOROMETHANE FRACTIONS OF ROOTS OF *Morinda citrifolia* AND ITS NEUROTOXICITY AND NEUROPROTECTION EFFECTS**

*Morinda citrifolia* is said to have countless biological activity. Damnacanthal and nordamnacanthal listed under anthraquinones group which were identified to be the major compounds in roots of *Morinda citrifolia*. Isolation and purification of both compounds were the interest in this research. 50:50 dichloromethane:hexane solvent was used as the mobile phase in column chromatography packed with acid-washed silica to isolate and purify both damnacanthal and nordamnacanthal. <sup>1</sup>H and <sup>13</sup>C NMR were carried out to elucidate on the structure of both compounds collected. Besides that, the investigation of other biological activity of both damnacanthal and nordamnacanthal were conducted. Solvent toxicity, IC<sub>50</sub> of hydrogen peroxide toxicity, neurotoxicity and neuroprotection assays were done on SH-SY5Y cell by conducting cell viability test of MTT. The result of neurotoxicity and neuroprotective effect of both compounds were determined by the percentage of cell viability of the SH-SY5Y cell.

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background and problem statement

The botanical description preferred scientific name of *Morinda citrifolia*. The botanical name for the genus was derived from the two Latin words morus, mulberry, and indicus, Indian, in reference to the similarity of the fruit of mengkudu to that of true mulberry (*Morus alba*). The species name indicates the resemblance of the plant foliage to that of some citrus species. *Morinda citrifolia* come from a family of Rubiaceae (coffee family) and subfamily of Rubioideae. The common names are mengkudu (Malaysia), canary wood (Australia), fromager and murier indien (French), i (Kosrae), Indian mulberry (English), lada (Guam, Northern Mariana Islands), mangal'wag (Yap), kesengel, lel, ngel (Palau), kikiri (Solomon Islands), kura (Fiji), mora de la India (Spanish), nen, nin (Marshall Islands, Chuuk), non (Kiribati), noni (Hawai'i, Marquesas), nono (Cook Islands, Tahiti), non, nonu atogi, gogu atogi (Niue, Samoa, Tonga, 'Uvea/Futuna) weipwul (Pohnpei). Apart of all the different names that are called, *Morinda citrifolia* benefits human with the medication benefit that it brings (Nelson, 2006).