

*Belalai Gajah*

**(CLINACANTHUS NUTANS)**

SCIENTIFIC EVIDENCE OF CANCER PREVENTION



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## PREFACE

This book contains information about the traditional used and phytochemicals of belalai gajah (*Clinacanthus nutans*). This report had scientifically supported the testimonies of Malaysian who claimed that *C. nutans* possesses antitumour effects and has saved many cancer patients. The uses of plant in traditional medicine and current studies had been discussed. Single compounds had been isolated by purification using chromatographic techniques. Apart from that, a brief review of concept between chemical composition and biological activities is also described in this book.



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# CHAPTER 1

## INTRODUCTION

Natural products have a vital role as medicine and prevention of diseases. Natural product is a chemical compound produced by the organisms such as a plant, a fungus, a bacterial species or even marine creatures found in the nature that are produced by the pathways of primary and secondary metabolism (Ganesan 2008). Natural products have been the major sources of chemical diversity in pharmaceutical discovery over the past centuries (Baker et al. 2007). In addition, natural product also has vital role in pharmacological area and commercial industries, which provide a lot of health benefits and medicinal products like antibacterial, anti-hepatotoxic, nutraceuticals, flavour and food additives (Catalani et al. 2016).

Various studies had been conducted by using plants and animals in order to know their biological effects. Crude extracts were found to have healing power in reducing diseases. The biological effect of crude extracts may lead to the discovery of new bioactive compounds and contribute to drugs development (Patwardhan, Vaidya, and Chorghade 2004). However, based on previous reports, very little effort has been made to establish the scientific basis of traditional medicine and develop the availability of the plants into useful and valuable pharmaceutical products (Yuan et al. 2016).

According to the World Health Organization (WHO), around 80% of the world population in the developing countries use plants as a source for the treatment of various diseases and ailments such as cancer treatment, anti-inflammatory, malaria and other chronic diseases such as