嘉南藥理科技大學專題研究計畫成果報告

海巴戟天葉乙醇萃取物對創傷弧菌的影響

計畫類別：☑個別型計畫　　□整合型計畫

計畫編號：CNHN9502

執行期限：95 年 01 月 01 日至 95 年 12 月 31 日

計畫主持人：陳姿秀

執行單位：嘉南藥理科技大學 保健營養系

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中文摘要

Morinda citrifolia（Rubiaceae）俗名為 Noni，中文名為海巴戟天。海巴戟天果實可以抑制肺癌及肉瘤的生長，也發現果實中的多醣類物質具有免疫節的功能；以酒精與己烷萃取海巴戟天葉發現具有抗肺結核菌成分。本研究主要是探討海巴戟天粗萃物對 *Vibrio vulnificus* 抗菌作用；*Vibrio vulnificus* 是革蘭氏陰性菌喜歡生長在高鹽環境，會導致敗血症及傷口感染。本實驗是以熱水及酒精萃取海巴戟天之葉，果實，青莖及褐莖中有效成分，並且評估海巴戟天之各種萃取物對於 *Vibrio vulnificus* 的抗菌能力。結果顯示海巴戟天葉，果實及青莖的水粗萃物對 *Vibrio vulnificus* 有抗菌能力，最小抑制濃度為 10 mg/ml。但是酒精粗萃物只有果實的部分在濃度 10 mg/ml 具有抗 *Vibrio vulnificus* 活性。

關鍵詞：海巴戟天，抗菌，*Vibrio vulnificus*。

ABSTRACT

Morinda citrifolia is reported to have a broad range of therapeutic effects, including antibacterial, antiviral, antifungal, antitumor, anti-inflammatory, and immune enhancing effects. In this study, the hot water and ethanol crude extracts were isolated from the leaves, fruits, green stems and brown stems of *Morinda citrifolia*, which were further used to estimate the antibacterial activity against *Vibrio vulnificus*. Our results showed that the aqueous from the leaves, fruits and green stems of *Morinda citrifolia* reveal the growth inhibition against *Vibrio vulnificus*. The minimum inhibitory concentration of *Morinda citrifolia* aqueous extracts were determined for clinical and environmental isolates of *Vibrio vulnificus* with 10 mg/ml. The ethanol extracts form fruits exhibit inhibitory activity at 10 mg/ml except from leaves and stems

INTRODUCTION

Morinda citrifolia, as known as noni, is a common plant of the Indo-Pacific region and grows through the philipine archipelago.

The bark, stem, root, leaf and fruit of the plant have many uses in traditional medicine, including as the treatment for diabetes, hypertension and cancer. Compounds is extracted from *Morinda citrifolia* display various biological activities, such as cardiovascular activity, antitumor activity, antiviral activity , antimicrobial activity and immunomodulator activity. A crude ethanol extract and hexane fraction show antitubercular activity. Base on these reports which led us to screen anti- *Vibrio vulnificus* activity using the aquoeos and ethanol extracts isolated from the leaves, fruits, and stems of this plant. *Vibrio vulnificus* is a gram-negative bacterium and causes fatal septicemia or wound infection, and the infection is characterized by formation of hemorrhagic and edematous lesions on the limbs. Our results showed that the aqueous extracts from the leaves, green stems and fruits of *Morinda citrifolia* reveal the growth inhibition against *Vibrio vulnificus*. The ethanol extracts did not show significant inhibitory activity except one extracts from fruits..

RESULTS

Anti-*Vibrio vulnificus* activity of the aqueous extracts

The leaves, brown stems, green stems and fruits crude extracts were isolated by 80 ˚C hot water, and the antimicrobial activity was carried out by colony counting on incubated agar plate. The 10 mg/ml hot water extracts from leaves, green stems and fruits of *Morinda citrifolia* exhibited significant inhibition effect for *Vibrio vulnificus* clinical and environmental isolates, YJ011, YJ014 and CG028, respectively, after 24 hr (Fig. 1, 2 and 3).

Anti-*Vibrio vulnificus* activity of ethanolic crude extracts

The 95 % ethanol extracts from noni leaves, brown stems, green stems fruits were dissolved in 10 % DMSO. Results showed that all except one extract from fruits exhibited inhibitory activity against *Vibrio vulnificus* clinical and environmental isolates, YJ011, YJ014 and CG028 with MIC=10 mg/ml (Fig. 4). Ethanol extracts obtained from leaves, brown stems and brown stem did not show inhibitory effect at 10 mg/ml.

DISCUSSION

The aqueous extracts from leaves, green stems and fruits and ethanol extracts from fruits exhibited anti-*Vibrio vulnificus* activity at 10 mg/ml. Previous results showed that aqueous extracts of *Morinda citrifolia* did not show significant growth inhibition for methicillin-resistant *Staphylococcus aureus* (MRSA) and Methicillin-sensitive *Staphylococcus aureus* (MSSA), the ethanol extracts from the fruits of *Morinda citrifolia* reveal the growth inhibition against MSSA and MRSA. Combinations of noni ethanol extracts and oxacillin showed potent synergy against MRSA. These results imply that different component may involved in anti-*Vibrio vulnificus and* anti-*Staphylococcus aureus* activity. Further studies will to investigate which compound is involved in growth inhibition of *Vibrio vulnificus and* anti-*Staphylococcus aureus*

EVALUVATION

This research is in line with the progress of grand and achieved to the respect. The results are reported on bacterial conference 2004.

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Figures

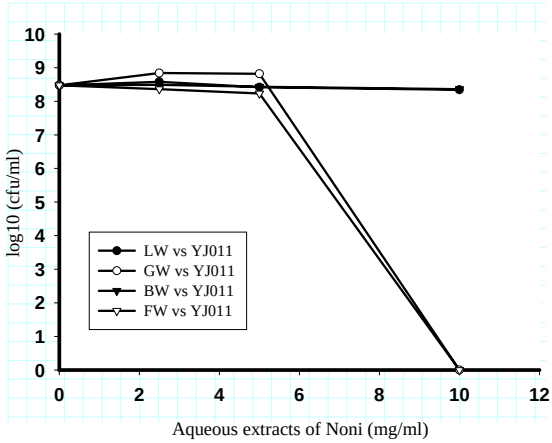

FIG. 1. Antibacterial activity of the aqueous extracts against *Vibrio vulnificus* YJ011. Bacteria (3 X 10^6) were inoculated into 1 ml LB containing different concentrations of the hot water extracts from the leaves (LW), brown stems (BW), green stems (GW) and fruits (FW) of noni. The cells were then incubated at 37℃ for 24 h. Growth of bacteria was determined by colony counting.

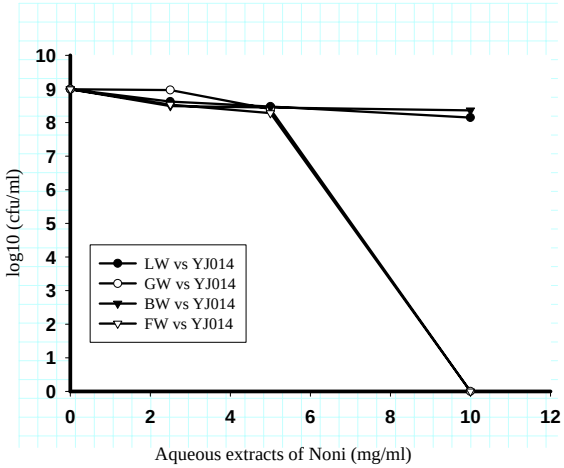

FIG. 2. Antibacterial activity of the aqueous extracts against *Vibrio vulnificus* YJ014. YJ011 and YJ014, clinical isolates.

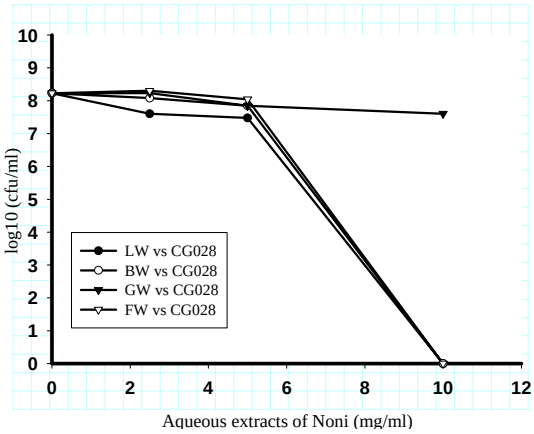

FIG. 3. Antibacterial activity of the aqueous extracts against *Vibrio vulnificus* CG028. CG028: environmental isolates.

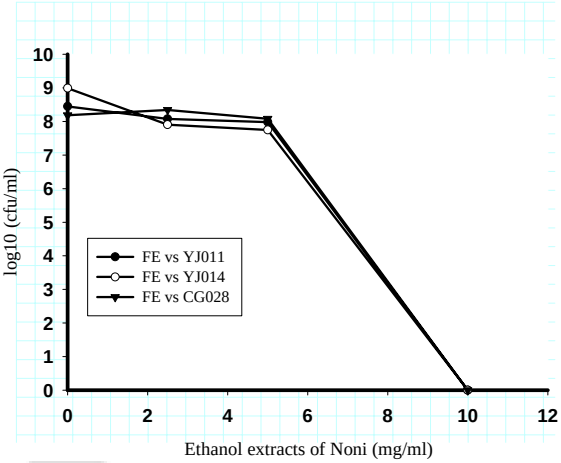

FIG. 4. Antibacterial activity of the ethanol extracts from fruits against clinical and environmental isolates of *Vibrio vulnificus.*