

A PRELIMINARY QUALITATIVE STUDY OF AN ALKALOID IN THE FRUIT OF TERONG BELANDA (*Cyphomandra betacea*, Cav)

Fredryk Mandey, Mikael Dominggus, Tjodi Harlim
Organic and Natural Product Chemistry Laboratory,
Department of Chemistry – Hasanuddin University

ABSTRACT

Preliminary studies on Terong Belanda (*C. betacea*) have been carried out in this investigation with an aim to examine the presence of an alkaloid in the fruit of Terong Belanda. Several protocols had been done including maceration, extraction, evaporation, separation under column chromatography, crystallization and recrystallization, and testing with series of alkaloid reagent test. Finally one fraction, fraction D, obtaining in white sharp crystals, 96 mg, m.p 117.5 °C gave positive results to an alkaloid especially from the group of atropine.

Keywords: terong belanda, qualitative analysis, alkaloid

INTRODUCTION

Terong Belanda (*C. betacea*), member of Solanaceae family and Solanum genus, is a typical high altitude (1800 – 2800 m) plants. Its best region to grow is the area with temperature range between 18 - 22° C and annual precipitation of 600 – 800 mm. Morphologically this plant grows as a small tree (2 – 3 metres height), have a single trunks with two or three branches. It form a cord form leaves, 17 – 30 cm long and 12 – 19 cm wide. The fruit is 5 –7 cm long, ovoid, glabrous, greenish yellow to orange in colour and the mesocarp is orange [1]. Traditionally indigenous peoples use this plant to alleviate respiratory diseases and cure anaemia. Various secondary metabolites had been found in these plants such as, *alkaloids* [2], *anthocyanins* and *lectin* [3]. Indeed, Torrado, A *et al* [4] also proved that *C. betacea* also contain some volatile compounds. More recently research showed that this plant also shown a pharmacological activity an anticancer [5].

This research is aimed to qualitatively testing the presence of alkaloids in the fruit part of *C. betacea* since the previous survey [2] had proven that the lower aerial part of *C. betacea* contained an alkaloids.

MATERIALS AND METHODS

The material of Terong Belanda was collected from Tana Toraja reGENCY in South Sulawesi province of Indonesia.

The fresh material was then blended and rapidly extracted in petroleum ether to remove all of the fatty acid. After removing all of the fatty acid, samples then was macerated with distilled water for 3 x 24 hours and then filtered with a Buchner funnel. The resulted filtrate was then evaporated to get the crude extract.

RESULTS AND DISCUSSION

The resulted crude from water maceration process was then extracted continuously with Dichloromethane which provided 2.3 gram dry extract Dichloromethane crude after the solvent was evaporated. This crude was then subjected to coloumn chromatography with an eluent of a mixture of Chloroform : methanol : water (24 : 6 : 1) v/v/v. Column chromatography resulted four major fraction A, B, C, and D with a different number of spot in it.

Fraction D which appeared as a single spot in TLC plates and had an R_f of 0.77 was further chrystallized and recrystaized to give 96 mg of white sharp crystals with an mp of 117.5 °C. This crystals was then proceed to be tested for its alkaloid contents under series of qualitative alkaloid test. The results was stated in Table 1.

The sample are now undergoing for an advanced spectroscopical testing to determine its exact structure. In the nearly futher we are attempting to produce the detail structure of the molecules base on an instrumental analysis.

Table 1 Results of alkaloid qualitative test of fraction D

No	Reagent Test	Results	Justification
1.	Mayer	Yellow precipitates	+ alkaloids
2.	Bouchardat	Yellow precipitates	+ alkaloids
3.	Dragendorf	Red precipitates	+ alkaloids
4.	Van Vitalli	Violet colour	+ atropine alkaloids

SUMMARY

The presence of an alkaloids in the fruit of Terong Belanda (*C. betacea*) have succesfully been proven in this research. Base on several qualitative alkaloids test it was found that the alkaloid in this plant belong to the Atropine class.

REFERENCES

1. Duke, J. 1983, *Handbook of Energy Crops*, Center for New Crops and Plants, Purdue University.
2. Evans, W.C., Ghani, A., and Wooley, V.A. 1972., *J.Chem.Soc, Perkin 1*, 217-219.
3. Sampietro, A.R., Isla, M.I., Quiroga, E.N., and Vattuone., M.A., 2001, *Plant Science*.
4. Torrado, A., Suarez, M., Duque, C., Krajewski, D., Neugebauer, W., and Schreier, P., 1995, *Flav. Fragr. J.* 10, 349.
5. Kim, H.W., Murakami, A., Nakamura, Y., and Ohigashi, H., 2002, *Cancer Letters*, 176, 7-16.