

The Angiotensin-I Converting Enzyme Inhibitor of Indonesia Herbs that may Benefit for Antihypertension Therapy

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Keywords: Indonesian Medicinal Plants, ACE-inhibitor, Antioxidant, *Morinda citrifolia*, *Citrullus lanatus*, and *Cucumis melo*.

Background: Indonesia has high biodiversity, and some of them has been used for traditional medicine. The fruit of Noni (*Morinda citrifolia*), Watermelon (*Citrullus lanatus*), and Cantaloupe (*Cucumis melo*) traditionally have been employed as a functional food for hypertensive therapy. However, the mechanism of the fruits as anti-hypertension is still limited. The Angiotensin-I Converting Enzyme (ACE) was a primary target of the antihypertensive drug such as captopril, lisinopril, and enalapril. However, the long-term application of the drugs may cause various side effects, such as dry cough, skin rashes, and angioedema. The other side, the pathophysiology of hypertension stimulated by oxidative stress that can lead damage to various tissues and implicate in cardiovascular disease. Therefore the ideally the hypertension drug may have a dual function as reducing the blood pressure and antioxidant activity, without side effect.

AIM: This research aims to examine the activity of ACE-inhibitor and phenol content of extracts of *Morinda citrifolia*, *Citrullus lanatus*, and *Cucumis melo*

Method: The fruits were dried and extracted using ethanol 80%, then frozen. The dried extracts were dissolved using distilled water at a concentration of 25 ppm, 50 ppm, 100 ppm, 200 ppm, and 400 ppm, and then adjusted to pH 4. The extracts were examined activity for ACE inhibition activity using KIT-WST Dojindo according to the protocol. While the content of total phenol of the fruits was analyzed by using a spectrophotometric.

Result: Inhibition rate on *Morinda citrifolia*, *Citrullus lanatus* and *Cucumis melo* were 23.18%, 52.44%, 52.44% (25 ppm); 30.81%, 65.08%, 74.21% (50 ppm); 61.15%, 77.66%, 81.24% (100 ppm); 83.45%, 88.15%, 80.67% (200 ppm); and 83.69%, 99.89%, 82.54% (400 ppm). The IC₅₀ of ACE-inhibition of *Morinda citrifolia*, *Citrullus lanatus* and *Cucumis melo* were 77.29 ppm, 20.90 ppm, and 8.06 ppm, respectively; while the total phenol were 529.08 ± 2.16 mg/L, 441.33 ± 3.61 mg/L, and 294.90 ± 1.44 mg/L, respectively.

Conclusion: This study suggested that the three fruits have activity as ACE-inhibitor and as the most potent was *Cucumis melo*. Whereas *Morinda citrifolia* contains the highest of phenol.

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