POTENSI SENYAWA FENOLIK DARI BUAH KERSEN (*Muntingia calabura*) SEBAGAI ANTI OKSIDAN ALAMI

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Abstract

Kersen (*Muntingia calabura*) is one of the Indonesian fruits that has a few economic value but it has potency as antioxidant because of its phenolic compounds. Kersen fruits were extracted in methanol and subjected to solvent-solvent partitioning to yield chloroform and methanol fraction. Total phenolic contents of the methanol extract, chloroform fraction and methanol fraction were estimated by *Folin Ciocalteau Reagent* (FCR) method. Total phenolic contents in methanol extract, methanol fraction, and chloroform fraction are 43 %, 15,6 % and 5,78 % respectively. Isolation of phenolic compounds were done using gravitation column chromatography method and resulted two compounds (A and B compounds). The structure of phenolic compounds were identified by spectroscopy method. The antioxidant activity of the methanol extract and two phenolic compounds were tested by 2,2-diphenyl-1-picrylhydrazyl (DPPH) and *ferric thiocyanate* (FTC). The extract and two phenolic compounds have DPPH radical scavenging activity and exhibited antioxidant activity using FTC test.

Keywords: phenolics, kersen (Muntingia calabura), antioxidant, DPPH, FTC test

Summary

Free radicals cause oxidative damage to human body which initiate and increase the risk of several diseases (Jacob, 1996; Kelly 1998). These diseases are cancer, cardiovascular, atheroschlerosis, cataracts, and some neurodegenerative diseases (Gutteridge, 1993; Knight, 1995; Goodwin, 1995). If the body is exposed to many free radicals, the risk of cancers and other diseases may increase. Thus required an additional intake of antioxidants from the outside, either natural or synthetic antioxidants (Rechner, 2002). Natural antioxidants is more desirable than synthetic antioxidants because it has no side effects. Natural antioxidants from fruits and vegetables can inhibit oxidative damage to the body because the phenolic content can act as antioxidants (Luo, 2002; Vinson, 1999).
Kersen has a lot of secondary metabolites compounds. Kersen leaves contain phenolic (Siddiqua, 2010) and at the roots of kersen are also reported to contain flavonoids (Kaneda, 1991). This research concerns to isolate phenolic compounds at kersen fruit.
Kersen fruits were collected from Tanjung Sari, Taman-Sidoarjo, East Java, Indonesia. Kersen (*Muntingia calabura* L.) fruits were extracted by maceration technique using methanol three times for 3x24 hours at room temperature. Then the methanol extracts were partioned using chloroform to obtain chloroform fraction and

methanol fractions. Chloroform fraction and methanol fractions were separated by various chromatographic techniques. Phenolic content of the methanol extract, chloroform fractions and methanol fraction were determined using the Folin-Ciocalteu reagent (FCR) and obtained information that the total phenolic content in extracts of methanol, methanol fraction, and chloroform fractions are 43%, 15.6% and 5.78%.

Two compounds, A and B compounds were obtained from methanol fraction. Structures of A and B compounds were identified using UV-Vis, IR and NMR spectroscopic. NMR analysis of compound A and B give the information that A and B are phenolic. The antioxidant activity of methanol extract, compound A and compound B in scavenging DPPH radical were determined using DPPH assay and give information that the extract and two phenolic compounds have DPPH radical scavenging activity. This test activity provides a very satisfactory outcome for the methanol extract, compound A and compound B have a higher activity than ascorbic acid. Thus, kersen fruit is very potent antioxidant.

The antioxidant activity of methanol extract, compound A and compound B in preventing peroxidation of linoleic acid were determined using FTC test. Methanol extract, compound A and compound B were able to reduce the oxidation of linoleic acid. The percentage of the activity of lipid peroxide of methanol extracts compound A and compound B are 61%, 55%, 74%.