

SURAT PERNYATAAN PENGALIHAN HAK PUBLIKASI

Menyatakan bahwa makalah berjudul "**ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC AND FLAVONOID CONTENT OF ETHANOLIC EXTRACTS OF LOCAL LONGAN (*Euphoria longan Lour.*) SEEDS AND RINDS**" Karya Muhtadi, Rifka Annida, Rosita Melannisa, Haryoto, Tanti Azizah, Peni Indrayudha, Andi Suhendi dari Fakultas Farmasi Universitas Muhammadiyah Surakarta telah dipresentasikan pada *International Conference on Medicinal Chemistry and Timmerman Award 2013 (ICMCTA 2013)* di Universitas Indonesia Depok pada tanggal 29 – 30 Oktober 2013.

Kami menyetujui hak publikasi pengelektronikannya kepada Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM) Universitas Muhammadiyah Surakarta.

Jakarta, 30 Oktober 2013

Panitia Pelaksana ICMCTA 2013
Universitas Indonesia,



Santi Purnasari, M.Si,
NIP. 197503261999032001



UNIVERSITAS MUHAMMADIYAH SURAKARTA
LEMBAGA PENELITIAN DAN PENGABDIAN KEPADA MASYARAKAT

Jl. A. Yani Pabelan Kartasura Tromol Pos 1 Surakarta 57102, Telp. 0271-717417 Pes. 155, 156, 158 Fax. 0271-715448
Website: <http://lppm.ums.ac.id>, e-mail: lppm@ums.ac.id, lppmums@gmail.com

SURAT TUGAS

No. 585/A.3-III/LPPM/X/2013

Bismillahirrohmanirrohim

Ketua Lembaga Penelitian dan Pengabdian pada Masyarakat Universitas Muhammadiyah Surakarta menugaskan kepada:

N a m a : **Dr. Muhtadi, M.Si**
NIK : 761
NIDN : 0609096902
Golongan/Pangkat : III-d / Penata TK.I
Jabatan Fungsional : Lektor Kepala
Fakultas/Prodi : Farmasi / Farmasi
Universitas Muhammadiyah Surakarta
Alamat Kantor : Jl. A. Yani Pabelan Kartasura, Surakarta 57102
Telp. 0271-717417 Fax. 0271-715448

Bentuk Tugas/Kegiatan : Sebagai Peserta dan Presenter Poster pada:
***International Conference on Medicinal Chemistry
and Timmerman Award 2013 (ICMCTA 2013)*** di
Universiitas Indonesia.

Tempat Kegiatan : Kampus Universitas Indonesia Depok

Tanggal Kegiatan : 29 s/d 30 Oktober 2013

Penyelenggara Kegiatan : Fakultas Farmasi Universitas Indonesia

Demikian harap dilaksanakan sebaik-baiknya.

Surakarta, 26 Oktober 2013

Ketua,



Prof. Dr. Harun Joko Prayitno

NIDN 00-280465-01

NIP 19650428 199303 1001

TANGGAL DATANG	
TANGGAL KEMBALI	
Mengetahui: Panitia Pelaksana ICMCTA 2013 (_____)	

P25



ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC AND FLAVONOID CONTENT OF
ETHANOLIC EXTRACTS OF LOCAL LONGAN (*Euphoria longan Lour.*)
SEEDS AND RINDS

*Muhtadi**, Rifka Annida, Rosita Melannisa, Haryoto, Tanti Azizah, Peni
Indrayudha, Andi Suhendi

The antioxidant, total phenolics and flavonoid content of local Longan (*Euphoria longan Lour.*) seeds and rinds were determined. The antioxidant activity test of ethanolic extract, hexane, ethyl acetate and methanol-water fractions of local longan seeds and rinds were evaluated by DPPH (2,2-diphenyl-1-picrylhydrazil) method. The total phenolic contents and total flavonoid contents were assessed spectrophotometrically. The results showed that the fraction of ethanol extract, ethyl acetate and methanol-water of longan seeds and rinds had high antioxidant activity whereas the hexane fraction had lowest activity. The highest activity was indicated of the ethyl acetate fraction longan rinds ($IC_{50} = 9.23 \mu\text{g/ml}$), ethyl acetate fraction longan seeds ($IC_{50} = 9.50 \mu\text{g/ml}$), and wasn't significantly differ with vitamin E ($IC = 8.88 \mu\text{g/ml}$). The total phenolic content of the ethanol extract of longan rinds and seeds as well as fractions ranged from $8.72 \pm 0,64$ to 692.85 ± 41.11 mg/g sample. Whereas the total flavonoid levels in the samples ranged from 80.64 ± 6.98 to 680.15 ± 40.94 mg/g sample.

Keywords: *Ethanol extract of the local longan seeds and rinds, fractions, antioxidants, 2,2-diphenyl-1-picrylhydrazil, total phenolic, total flavonoid.*

* Faculty of Pharmacy, Muhammadiyah University of Surakarta Jl. Achmad Yani Tromol Pos 1, Pabelan Kartasura, Surakarta, Indonesia. Kode Pos 57102. Email: pmuhtadi@gmail.com.



ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC AND FLAVONOID CONTENT OF ETHANOLIC EXTRACTS OF LOCAL LONGAN (*Euphoria longan Lour.*) SEEDS AND RINDS

Muhtadi*, Rifka Annida, Rosita Melannisa, Haryoto, Tanti Azizah, Peni Indrayudha, Andi Suhendi

Faculty of Pharmacy, Muhammadiyah University of Surakarta
 Jl. Achmad Yani Tromol Pos 1, Pabelan Kartasura, Surakarta, Indonesia. Kode Pos 57102. Email: muhtadi@umsu.ac.id

Abstract

The antioxidant, phenolics total and flavonoid content of local Longan (*Euphoria longan Lour.*) seeds and rinds were determined. The antioxidant activity test of ethanolic extract, hexane, ethyl acetate and methanol-water fractions of local longan seeds and rinds were evaluated by DPPH (2,2-diphenyl-1-picrylhydrazil) method. The total phenolic contents and total flavonoid contents were assessed spectrophotometrically. The results showed that the fraction of ethanol extract, ethyl acetate and methanol-water of longan seeds and rinds had high antioxidant activity whereas the hexane fraction had lowest activity. The highest activity was indicated of the ethyl acetate fraction longan rinds ($IC_{50} = 9.23 \mu\text{g/ml}$), ethyl acetate fraction longan seeds ($IC_{50} = 9.50 \mu\text{g/ml}$), and wasn't significantly differ with vitamin E ($IC = 8.88 \mu\text{g/ml}$). The total phenolic content of the ethanol extract of longan rinds and seeds as well as fractions ranged from 8.72 ± 0.64 to $692.85 \pm 41.11 \text{ mg/g}$ sample. Whereas the total flavonoid levels in the samples ranged from 80.64 ± 6.98 to $680.15 \pm 40.94 \text{ mg/g}$ sample.

Keywords : *The local longan seeds and rinds, ethanol extract and fractions, antioxidants, 2,2-diphenyl-1-picrylhydrazil, total phenolic, total flavonoid.*

Introduction

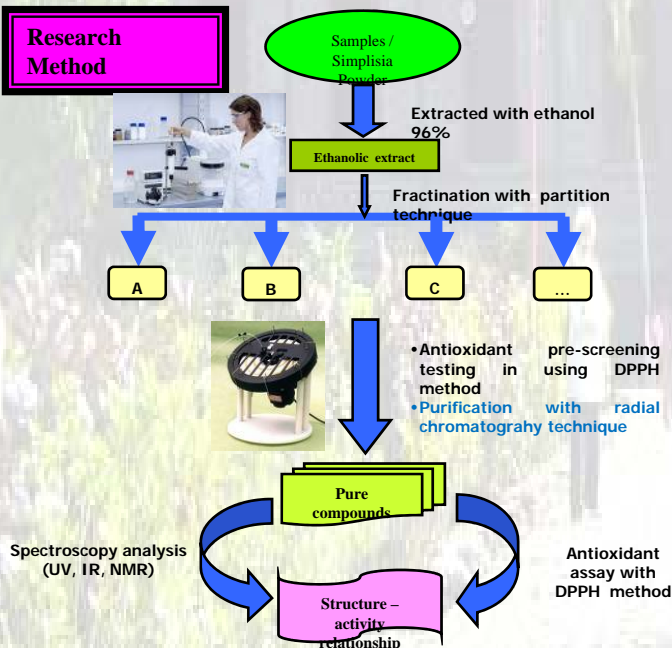


- Fruit peels are often regarded as a waste or garbage
- Whereas chemically, "waste" are organic materials = chemicals substances that have chemical and biological activity
- Pre-screening studies to test the antioxidant activity, cytotoxic and antibacterial of waste fruit peels are still very limited.
- From Kelengkeng (*Euphoria longan*) fruit skin: (-)-epicatechin, proanthocyanidin A2, ellagat acid, quercetin, kaempferol glycosides and hydroxycinnamate derivatives (Jaitrong et. al, 2006).

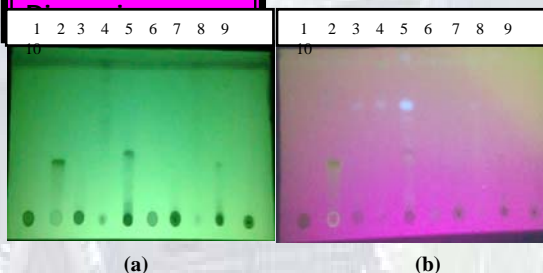
Objective

1. This research aims to determine the potential activity of antioxidant of local Longan (*Euphoria longan Lour.*) seeds and rinds using DPPH assay.
2. To search the prospective antioxidant of crude extract and their fractions from local Longan (*Euphoria longan Lour.*) seeds and rinds → *as herbal medicine material.*

Research Method



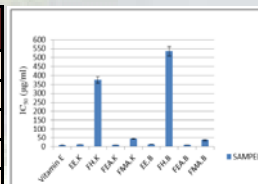
Result & Discussion



Picture 1. TLC profiles of ethanolic extract and their fractionation of Longan peels and seeds. (a) UV 254nm (left), (b) UV 366nm (right), GF 254nm silica stationary phase, mobile phase : chloroform: methanol (9:1). Spotting of the order of 1-10 ; standard routine, standard quercetin, EEK, FHK, FEAk, FMAk, EEB, FHB, FEAB, FMAB.

Table 1. Antioxidant activity, flavonoid and phenolic total levels of ethanol extract and their fraction of Longan peel and seed

Sample		Antioxidant activity (IC_{50} , $\mu\text{g/ml}$)	Levels of Flavonoid (mg/g sample)	Phenolic total (mg/g sample)
peel	Ethanol extract	11.85 ± 0.96	477.64 ± 2.81	464.00 ± 41.45
	Ethyl acetate fraction	9.23 ± 0.15	680.15 ± 40.94	692.85 ± 41.11
	Methanol-water fraction	42.89 ± 1.91	80.64 ± 6.98	226.52 ± 13.99
seed	Ethanol extract	13.41 ± 0.21	160.99 ± 15.89	273.87 ± 15.36
	Ethyl acetate fraction	9.50 ± 0.20	339.92 ± 45.91	656.61 ± 13.07
	Methanol-water fraction	35.85 ± 0.38	96.69 ± 11.81	183.40 ± 11.73
	Vitamin E	8.88 ± 0.12		



Picture 2. Determination of IC_{50} value Vitamin E and Samples

- Ethanolic extract of Longan seed and peel had IC_{50} value near similar to Vitamin E.
- Ethyl acetate fraction of Longan seed and peel are more active than total extract and the other fraction. Ethyl acetate fraction has highest antioxidant activity.

Conclusion

1. The ethanolic extract of local Longan peels and rinds showed a highly antioxidant activity, with the IC_{50} value 11.85 ppm and 13.41 ppm, respectively.
2. Ethyl acetate fraction showed more active than total extract and the other fractions.
3. Ethyl acetate fraction of local Longan peel is **the best prospective as antioxidant ingredient.**

References

Patong, S., Rattanapattone, N. and Manthey, JA., 2006. Analysis of the Phenolic Compounds in Peel of *Dimocarpus longan Lour.* Peel, Proc. Fla. State Hort. Soc., 119:371-375.
 Prasad, KN., Hao, J., Shi, J., Liu, T., Li, J., Wei, X., Qiu, S., Xue, S., and Jiang, Y., 2009. Antioxidant and Anticancer Activities of High Pressure-Assisted Extract of Longan (*Dimocarpus longan Lour.*) fruit pericarp, Innovative Food Science & Emerging Technologies, 14 (4):413-419.