

## SURAT PERNYATAAN PENGALIHAN HAK PUBLIKASI

Menyatakan bahwa makalah berjudul "**ANTIOXIDANT POTENTIAL OF SOME *INDONESIAN FRUIT PEELS***" Karya **Muhtadi, Haryoto, Tanti Azizah, Peni Indrayudha, Andi Suhendi** dari Fakultas Farmasi Universitas Muhammadiyah Surakarta telah dipresentasikan secara oral pada *International Conference on Nutraceutical and Cosmetic Science 2013 (ICNACS 2013)*, yang diselenggarakan oleh Fakultas Farmasi Universitas Indonesia di hotel Atlet Century Jakarta pada tanggal 23 – 24 Oktober 2013.

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SURAT TUGAS

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**Oral****ANTIOXIDANT POTENTIAL OF SOME  
INDONESIAN FRUIT PEELS****Muhtadi\*, Haryoto, Tanti Azizah, Peni Indrayudha, Andi  
Suhendi**

The ethanolic crude extracts of some Indonesian fruit peels were screened for their free radical scavenging properties using vitamin E as standard antioxidant. Free radical scavenging activity was evaluated using 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical. The antioxidant activity of Kelengkeng (*Euphoria longan* Lour. Steud) fruit peel was the strongest, followed in descending order by Durian (*Durio zibethinus* Murr.), and Rambutan rind (*Nephelium lappaceum*, Linn.) showed weak free radical scavenging activity with the DPPH method. The IC<sub>50</sub> of the ethanolic extracts ranged between 9.23 and 158.67 µg/ml and that of vitamin E was 8.48 ± 0.1 µg/ml. The result showed that prospective antioxidant of Kelengkeng fruit peel extract was higher than the durian and rambutan fruit peels extracts.

**Keywords:** *antioxidant, some fruit peels Indonesia, and DPPH assay.*

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## 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
- Example: mangosteen peel (Manggis) contain alpha-mangostin a highly active as an antioxidant and has been used as an herbal medicine.
- Pre-screening studies to test the antioxidant activity, cytotoxic and antibacterial of waste fruit peels are still very limited.



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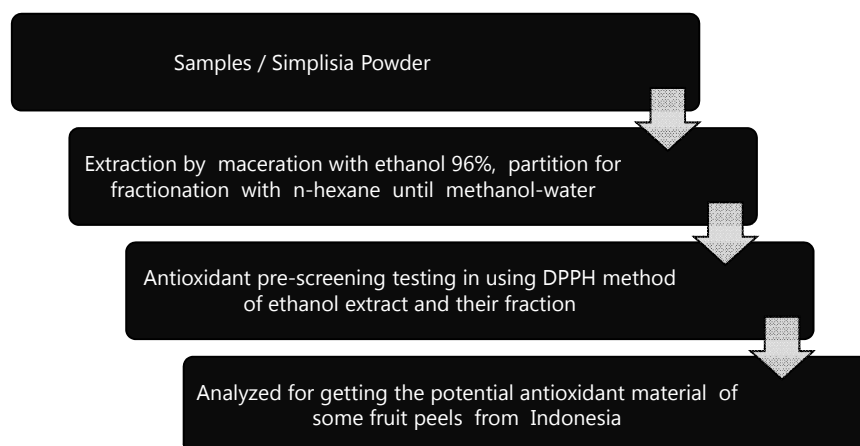
## Objectives

1. This research aims to determine the potential activity of antioxidant of some Indonesian fruit peels using DPPH assay.
2. To search the prospective antioxidant from "waste" of some fruit peels from Indonesia → as herbal medicine material.



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## RESEARCH METHOD



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## Antioxidant activity of Kelengkeng (*Euphoria longan* Lour. Steud)

Tabel 6. Penetapan  $IC_{50}$ ,  $EC_{50}$  dan  $ARP$

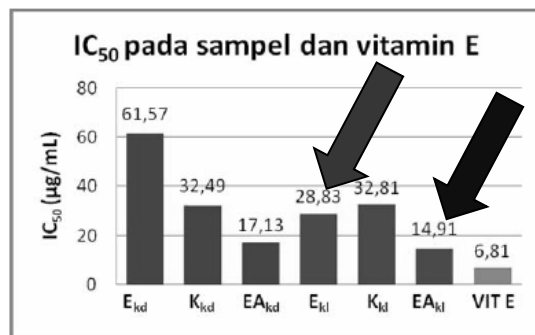
SAMPSEL	$IC_{50}$ ( $\mu\text{g/ml}$ )*			Rerata $IC_{50} \pm$ SD**	$EC_{50}$ (mg sampel/mg DPPH)	$ARP$	
	I	II	III				
VITAMIN E	8,91	8,75	8,98	$8,88 \pm 0,12$	0,056	1785,71	
KULIT	E. Etanol	11,36	11,24	12,96	$11,85 \pm 0,96$	0,075	1333,33
	F. Heksana	363,83	378,25	382,35	$374,81 \pm 9,73$	2,377	42,07
	F. Etil asetat	9,10	9,19	9,39	$9,23 \pm 0,15$	0,058	1724,14
	F. Metanol Air	43,99	43,99	40,69	$42,89 \pm 1,91$	0,272	367,65
BIJI	E. Etanol	13,51	13,55	13,16	$13,41 \pm 0,21$	0,085	1176,47
	F. Heksana	489,67	540,29	576,68	$535,55 \pm 43,69$	3,396	29,45
	F. Etil asetat	9,46	9,72	9,32	$9,50 \pm 0,20$	0,060	1666,67
	F. Metanol Air	35,42	36,13	36,01	$35,85 \pm 0,38$	0,227	440,53



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## Antioxidant activity of Durian (*Durio zibethinus* Murr.)

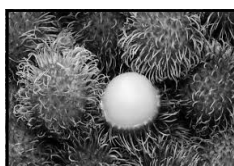


Gambar 8. Hasil  $IC_{50}$  pada sampel dan vitamin E.  
Keterangan: kd ■ : kulit dalam; kl ■ : kulit luar; E:Ekstrak Etanol; K:fraksi Kloroform; EA:fraksi Etil Asetat; VIT E ■ Vitamin E



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## Antioxidant activity of Rambutan (*Nephelium lappaceum* Linn)

Sampel	Kulit rambutan			Biji rambutan		
	Rerata IC <sub>50</sub> (μg/mL) ± SD	EC (μg sampel/μg DPPH)	ARP	Rerata IC <sub>50</sub> (μg/mL) ± SD	EC (μg sampel/μg DPPH)	ARP
Ekstrak etanol	7,74±0,76	0,049	2037,39	210,31±18,31	1,334	74,98
F.kloroform	6,64±1,14	0,042	2373,58	171,71±17,27	1,089	91,84
F.etil asetat	4,29±0,72	0,027	3679,25	158,67±34,91	1,006	99,39
F.metanol air	8,34±0,59	0,053	1890,62	194,45±18,52	1,233	81,10
vitamin E	8,48±0,77	0,053	1859,64			



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## RESULTS AND DISCUSSION

Table of value IC<sub>50</sub> of various extract and fraction of Some fruit peels and seed

No	Various extract and fraction	IC <sub>50</sub> value (ppm)
1	Ethanolic extract of kelengkeng fruit peel	11,85
2	Ethyl acetate fraction of kelengkeng fruit peel	9,23
3	Ethanolic extract of durian peel	28,83
4	Ethyl acetate fraction of durin peel	14,91
5	Ethanolic extract of rambutan peel	7,74
6	Ethyl acetate fraction of rambutan peel	4,29



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## RESULTS AND DISCUSSION

Phenolic compounds had been isolated / reported

- From Kelengkeng (*Euphoria longan*) fruit skin: (-)-**epicatechin**, **proanthocyanidin A2**, **ellagat acid**, **quercetin**, **kaempferol glycosides** and **hydroxycinamate derivatives** (Jaitrong, 2006).
- From rambutan (*Nephelium lappaceum* Linn) rind: **ellagat acid**, **corilagin**, **geranin**, **flavonol substituted** and **phenolic acid derivatives** (Asrianti et al., 2006).
- From durian (*Durio zibethinus* Murr.) rind: **apigenin**, **p-hydroxybenzoic acid**, **vanilic acid**, **kafeat acid**, **ferulic acid**, and **quercetin anisat acid** (Poovarodom et al., 2010).



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## CONCLUSION

1. The etanolic extract of rambutan rind showed the highest antioxidant activity, with the  $IC_{50}$  value 7.10 ppm. While the durian peel extract showed lower with  $IC_{50}$  value of 28.83 ppm.
2. Ethyl acetate fraction of each fruit peel extracts, showed the highest antioxidant activity than the other fractions.
3. Rambutan peel is **the best prospective as** antioxidant ingredient.



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## Terima Kasih

# ***Thank You***



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# CERTIFICATE OF PARTICIPATION

We hereby declare that

**MUHTADI**

has participated as

**SPEAKER (ORAL PRESENTER)**

in the 2<sup>nd</sup> International Conference on Nutraceutical and Cosmetic Sciences

Atlet Century Hotel, October 23-24, 2013

Indonesian Pharmacist Association Accreditation Number : 612/SK-SKP/PP.IAI/VI/2013

Participant 10 SKP/ Speaker 7 SKP/ Poster Participant 3 SKP / Moderator 3 SKP/ Committee 2 SKP

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Dr. Mahdi Jufri, M.Si., Apt.  
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