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[Home](#)

[About Us](#)

[Editorial Board](#)

[Instruction to Authors](#)

[Current Issue](#)

[Article In Press](#)

[Table Of Contents](#)

## CURRENT ISSUE

Volume 12, ISSUE 2, Apr - Jun,  
2020

Q Manuscript Status...

GO

2020

## ARTICLE IN PRESS

**RMDL: Classification of Parkinson's disease by nature-inspired Algorithm**

**Antidiabetic activity (In vitro alpha amylase inhibitory) of ethanol extract of Carissa carandas Linn. roots.**

**Six sigma: an embellished exploration in the field of pharmaceutical industry**

**The effect of Sida acuta on bacterial enzymes in azoxymethane-induced experimental colon cancer**

**Premature ageing in children: a rare genetic disorder called progeria.**

**Stress, Depression & Gut Microbiota: The Gut-Brain Axis Regulation**

**Zinc oxide nanoparticles and antibiotics mediated combinatorial approach to enhance antibacterial potential**

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## Article Detail

### Standardization of a Crude Drug *Moringa oleifera* Leaf from Africa, India and Local (Indonesian) which Cultivated in Bojonegoro Indonesia

Author: NIKMATUL EKA, KARTINI, LINTANG KARINA PUTRI

**Abstract:** Purpose: The research was to determine specific parameters (macroscopy and microscopy) and non-specific parameters (loss on drying, total ash content, acid insoluble ash content, water-soluble extractive matter, ethanol-soluble extractive matter), heavy metal contaminant (Pb, Hg, As, Cu) and microbial contaminant (Total Plate Count and Total Yeast Mold). Research also determined a total flavonoid of *M. oleifera* leaf. Methodology: The method carried out according to the procedure stated in the Materia Medika Indonesia 5 th edition. Methods to detection Contaminants were referred to WHO guidelines for assessing the quality of herbal medicines. The determination of total flavonoid was performed by spectroscopic method. Results: Crude drug of *M. oleifera* leaf meet the specific parameters (macroscopy and microscopy). Nonspecific parameters of Africa, India, Local *M. oleifera* leaf shows that loss on drying ( $8.06 \pm 0.03$ ;  $8.89 \pm 0.31$ ;  $7.56 \pm 0.17$  %), total ash content ( $8.64 \pm 0.43$ ;  $10.64 \pm 0.90$ ;  $15.31 \pm 0.87$  %), acid insoluble ash content ( $0.56 \pm 0.08$ ;  $0.35 \pm 0.01$ ;  $0.36 \pm 0.06$  %), water-soluble extractive matter ( $21.38 \pm 1.39$ ;  $30.12 \pm 2.06$ ;  $12.68 \pm 1.12$  %), ethanol-soluble extractive matter ( $39.37 \pm 1.51$ ;  $27.74 \pm 2.44$ ;  $27.09 \pm 1.43$  %), contaminant test including heavy metal contaminant shows that Pb, Cd, As and Hg were not to be detected. Microbial contaminant (Total Plate Count and Total Yeast Mold) under limits of WHO standart. Total flavonoid content of Africa, India, Local *M. oleifera* leaf were  $8.12 \pm 0.52$  mg/ 100 mg QE;  $10.69 \pm 0.15$  mg/ 100 mg QE dan  $13.08 \pm 0.08$  mg/ 100 mg QE respectively. Conclusion: *Moringa* Leaves meet specific parameters (macroscopy and microscopy test). Non-specific parameter tests of Africa, India, Local *Moringa* Leaf shows that loss on drying, acid insoluble ash content, water-soluble extractive matter, ethanol-soluble extractive matter, contaminant test including heavy metal contaminant shows that (Pb, Cd, As and Hg) and microbial contaminant (Total Plate Count and Total Yeast Mold) meet the standard required, only total ash content did not meet the standard. Total Flavonoid content shows that the extract of *M. oleifera* from local (Indonesia) variety is higher than others.

**Keyword:** *M. oleifera* leaf, Standardization, Crude Drug

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