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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
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Judul Jurnal Ilmiah (Artikel) : Extraction of homologous compounds of curcuminoid isolated from temulawak (curcuma xanthorrhiza roxb.) Plant

Jumlah Penulis : 6 orang (**B. Cahyono**, J. Ariani, H. Failasufa, M. Suzery, S. Susanti, H. Hadiyanto)

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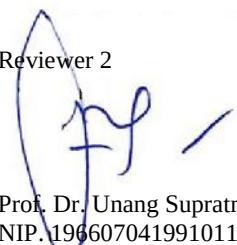
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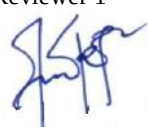
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Semarang, 30 Maret 2020

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 Unit Kerja : Dep.Kimia, FMIPA UNPAD

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 Prof. Dr. Andri Cahyo Kumoro, S.T., M.T.
 NIP. 197405231998021001
 Unit Kerja : Teknik Kimia FT UNDIP

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- Ruang lingkup dan kedalaman pembahasan:** Isi artikel meliputi 3 homolog senyawa kurkuminoid dari rimpang Temu Lawak dari 3 lokasi di Jawa Tengah. Isi artikel masih dalam ruang lingkup Rasayan Journal of Chemistry. Namun tidak jelas ada tujuan dari percobaan yang dilakukan karena tidak disebutkan dalam pendahuluan. Hasil percobaan disajikan dengan baik dan dibahas dengan ringkas, dibandingkan dengan hasil penelitian oleh peneliti terdahulu dan didukung dengan pustaka yang relevan dan mutakhir. Terdapat 18 (54.54%) pustaka yang digunakan dalam pembahasan. Namun, pembahasannya tidak cukup mendalam secara teoritik.
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- Kelengkapan unsur dan kualitas terbitan:** Jurnal ini tergolong **jurnal internasional bereputasi** karena terindeks **Scopus** kategori **Q2** untuk Pharmacology, Toxicology dan Phamaceutics dengan SJR 0,252 dan H Index 18 pada tahun 2018. Anggota editorial Board berasal dari beberapa Negara, terdapat pedoman penulisan yang jelas dan format penulisan konsisten. Penerbitan dilakukan 4 kali dalam setahun dan komunikasi penulis dan editor dilakukan melalui email. Tampilan tabel pada setiap artikel baik namun tidak seperti pada jurnal ilmiah pada umumnya karena masih menggunakan garis vertikal dan horizontal. Editor masih kurang jeli dalam menyunting artikel karena beberapa gambar dan rumus kimia sangat kecil, sukar dibaca dan ukurannya tidak baku. Pada umumnya, artikel yang diterbitkan merupakan hasil karya penulis dari beberapa negara, terutama India, Indonesia, Malaysia, dan negara-negara Asia lainnya. Gaya selingkung yang diterapkan jurnal ini cukup baik dan konsisten, walaupun bahasa inggris yang digunakan banyak yang kurang baik. Penerbit jurnal ini adalah Rasayan Journal, India

Semarang, Maret 2020

Reviewer 1



Prof. Dr. Andri Cahyo Kumoro, S.T., M.T.

NIP.197405231998021001

Unit Kerja : Teknik Kimia FT UNDIP

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 Volume 12, Issue 1, January-March 2019, Pages 7-13

Extraction of homologous compounds of curcuminoid isolated from temulawak (*Curcuma xanthorrhiza* roxb.) plant [\(Article\)](#) [\(Open Access\)](#)

 Cahyono, B.^a, [✉](#), Ariani, J.^a, Failasufa, H.^a, Suzery, M.^a, Susanti, S.^b, Hadiyanto, H.^c [✉](#) [👤](#)
^aDepartment of Chemistry, Faculty of Sciences and Mathematics, Diponegoro University, Jl Prof Soedarto, SH, Tembalang, Semarang, 50275, Indonesia

^bDepartment of Agriculture, Faculty of Animal Science and Agriculture, Diponegoro University, Jl Prof Soedarto, SH, Tembalang, Semarang, 50275, Indonesia

^cDepartment of Chemical Engineering, Faculty of Engineering, Diponegoro University, Jl Prof Soedarto, SH, Tembalang, Semarang, 50271, Indonesia

Abstract

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In the herbal pharmacopeia Indonesia, curcumin is used as a marker compound in the temulawak extract. In this study, we analyzed the contents and profiles of curcuminoid constituent in temulawak extracts from three centers for the development of medicinal plants in Central Java, Indonesia; i.e Semarang Regency, Semarang City, and Karanganyar Regency. The results showed that the extracts of temulawak have yields ranging from 8.25 - 14.90% and the highest yield was obtained in the sample from one of the farmers in Semarang (B1). Meanwhile, total curcuminoid is ranging from 8.70-11.50% and the highest value belongs to sample grown in Semarang (B1 and B2, in the average levels of 11.50% and 11.30%). Variations in the composition of the curcuminoid constituent showed that curcumin is the main component in all samples. The relative contents of these compounds ranged from 68 to 76%, while the demethoxycurcuminis and bisdemethoxycurcuminis were found in the range of 23 to 29%, and from 1 to 3%, respectively. © RASAYAN. All rights reserved.

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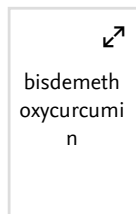
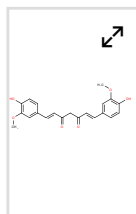
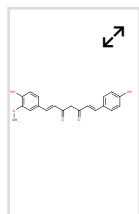
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Formation of boron – silica based mesoporous and studies of its adsorption ability for curcuminoids

 Firmansyah, A. , Nugrahani, I. , Wirasutisna, K.R.
 (2020) *Biointerface Research in Applied Chemistry*

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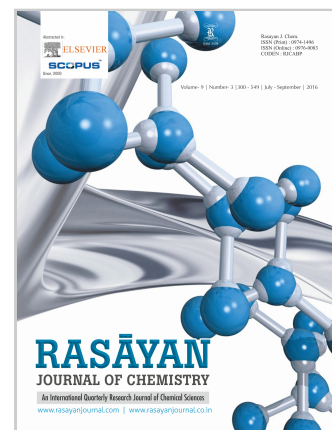
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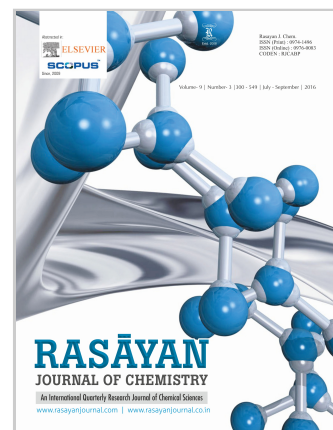
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Sciences Central University of Punjab,
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Soro YAYA

Laboratoire des Procédés Industriels de
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Energies Nouvelles (LAPISEN), Institut
National Polytechnique (INP-
HB), Yamoussoukro, BP 991
Yamoussoukro(Côte d'Ivoire)

William E. ACREE

Department of Chemistry, 1155 Union
Circle Drive #305070, University of
North Texas, Denton, TX 76203-5017
[USA](#)

Junfang ZHAO

Division of Pathology and Laboratory
Medicine, Cincinnati Children's
Hospital Medical Center, 3333 Burnet
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Sadanandan E. VELU

Department of Chemistry, The University of Alabama at Birmingham, 901, 14th Street South, [Birmingham, AL](#) - 35294 – 1240

Y. Frank CHENG

Corrosion and Pipeline Engineering Laboratory, Dept. of Mechanical and Manufacturing Engineering, Schulich School of Engineering, University of Calgary, Calgary, Alberta, [Canada](#) T2N 1N4

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Volume 12, Number 1, 1-401, January- March (2019)

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Yuandani, S. Yuliasmi, D. Satria, R. F. Dongoran, M. S. Sinaga and N. H. A. Marpaung

Rasayan J. Chem, 12 (1), 01 - 06 (2019)

Keywords: Curcuma mangga, immunomodulatory, phytochemical constituents, phagocytosis

DOI: <http://dx.doi.org/10.31788/RJC.2019.1215050>

EXTRACTION OF HOMOLOGOUS COMPOUNDS OF CURCUMINOID ISOLATED FROM TEMULAWAK (Curcuma xanthorrhiza Roxb.) PLANT

B. Cahyono, J. Ariani, H. Failasufa, M. Suzery, S. Susanti and H. Hadiyanto

Rasayan J. Chem, 12 (1), 07 - 13 (2019)

Keywords: Temulawak, Homologous, Compound, Curcuminoid, Central Java, Indonesia.

DOI: <http://dx.doi.org/10.31788/RJC.2019.1213092>

SYNTHESIS AND CHARACTERIZATION OF MAGNETIC Fe₃O₄ NANOPARTICLES USING OLEIC ACID AS STABILIZING AGENT

F. C. Nalle, R. Wahid, I. O. Wulandari and A. Sabarudin

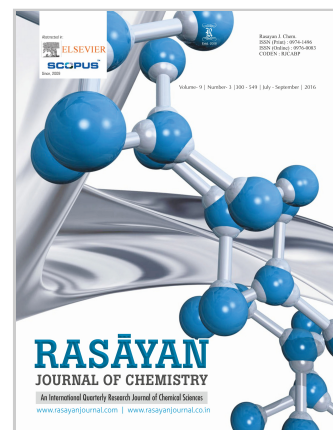
Rasayan J. Chem, 12 (1), 14 - 21 (2019)

Keywords: Iron oxide, Nanoparticles, Oleic acid, Magnetite, Maghemite.

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Rasayan J. Chem, 12 (1), 379 - 382 (2019)

Keywords: crude fat, hair, nails, ultraviolet irradiation, petroleum ether**DOI:** <http://dx.doi.org/10.31788/RJC.2019.1211063>**SYNTHESIS AND ANTIBACTERIAL ACTIVITY OF NOVEL VANILLIC ACID HYBRID DERIVATIVES***Maruti S. Satpute, Vijay D. Gangan and Indu Shastri*

Rasayan J. Chem, 12 (1), 383 - 388 (2019)

Keywords: Vanillic acid, IR, ¹HNMR, TOF MS, DCC, DMAP, antibacterial, ditch-plate method.**DOI:** <http://dx.doi.org/10.31788/RJC.2019.1215023>**SIMULTANEOUS ESTIMATION AND VALIDATION OF LC-MS METHOD FOR THE DETERMINATION OF BARNIDIPINE IN HUMAN PLASMA: ITS STABILITY INDICATING***Gopi Raju Talari, and V. Kiran Kumar*

Rasayan J. Chem, 12 (1), 389 - 401 (2019)

Keywords: Bamidipine, LC-MS/MS, Di-hydropyridine (DHP), Human Plasma and Methanol.**DOI:** <http://dx.doi.org/10.31788/RJC.2019.1215040>[Home](#)
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EXTRACTION OF HOMOLOGOUS COMPOUNDS OF CURCUMINOID ISOLATED FROM TEMULAWAK (*Curcuma xanthorrhiza Roxb.*) PLANT

**B. Cahyono^{1,*}, J. Ariani¹, H. Failasufa¹, M. Suzery¹, S. Susanti²
and H. Hadiyanto^{3,*}**

¹Department of Chemistry, Faculty of Sciences and Mathematics, Diponegoro University, Jl Prof Soedarto, SH, Tembalang, Semarang, Indonesia (50275)

²Department of Agriculture, Faculty of Animal Science and Agriculture, Diponegoro University, Jl Prof Soedarto, SH, Tembalang, Semarang, Indonesia (50275)

³Department of Chemical Engineering, Faculty of Engineering, Diponegoro University, Jl Prof Soedarto, SH, Tembalang, Semarang, Indonesia (50271)

*E-mail : bbc_cahyono@yahoo.com , hadiyanto@live.undip.ac.id

ABSTRACT

In the herbal pharmacopeia Indonesia, curcumin is used as a marker compound in the temulawak extract. In this study, we analyzed the contents and profiles of curcuminoid constituent in temulawak extracts from three centers for the development of medicinal plants in Central Java, Indonesia; i.e Semarang Regency, Semarang City, and Karanganyar Regency. The results showed that the extracts of temulawak have yields ranging from 8.25 - 14.90% and the highest yield was obtained in the sample from one of the farmers in Semarang (B1). Meanwhile, total curcuminoid is ranging from 8.70-11.50% and the highest value belongs to sample grown in Semarang (B1 and B2, in the average levels of 11.50% and 11.30%). Variations in the composition of the curcuminoid constituent showed that curcumin is the main component in all samples. The relative contents of these compounds ranged from 68 to 76%, while the demethoxycurcuminis and bisdemethoxycurcuminis were found in the range of 23 to 29%, and from 1 to 3%, respectively.

Keywords: Temulawak, Homologous, Compound, Curcuminoid, Central Java, Indonesia.

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INTRODUCTION

Temulawak (*Curcuma xanthorrhiza Roxb.*) is an indigenous plant from Indonesia¹. This plant belongs to the biggest five of Indonesian commodity medicinal plants to be developed and commercialized². People were familiar with temulawak rhizome which used as raw materials in traditional medicine and agro-industry such as for natural food colorants³. It has been reported that chemical compounds of temulawak possess some pharmacotherapy activities such as antimicrobial, antioxidants, anticancer, and anti-inflammation⁴⁻¹⁰. The major bioactive compound in temulawak is curcuminoid^{11, 12}. Curcuminoid is a class of phenolic compounds composed by curcumin (C), demethoxycurcumin (DMC), and bisdemethoxycurcumin (BDMC)¹¹. These compounds are homologous with the chemical structure as shown in Fig.-1. The activity of these components is different, for example, the anticancer activity of DMC and BDMC is higher than C¹³.

Several studies related to the curcuminoid content analysis of *Curcuma* genus have been reported in several worldwide regions and the most study was conducted on the commodity of turmeric (*Curcuma longa*). It also has been reported about total curcuminoid of saffron growing in India and Thailand^{14, 15}. In South Korea, total curcuminoid isolated from two species of *Curcuma longa* and *Curcuma aromatica* growing at two different areas of that country has been reported as well¹⁶. In line with those studies, we are interested in the analysis of curcuminoid isolated from temulawak growing in Central Java. Central Java- a province

REMOVAL OF *E.Coli* FROM GROUNDWATER AND SURFACE WATER BY USING NYLON MEMBRANE FILTRATION TECHNIQUE

S. Vanitha, P. Vijayalakshmi*, P.K. Raji and M. Praba

Department of Civil Engineering, Sathyabama Institute of Science and Technology,
Chennai-600119, (Tamilnadu) India

*E-mail: vijayalakshmi panneerselvam@yahoo.co.in

ABSTRACT

In the present study, a low-cost filter material such as Nylon was used for the disinfection of groundwater poses an excellent bacterial filtration activity against *Escherichia coli* (gram-negative) cultures. Textile fabrics have gained wide acceptance as a filtration membrane, and various substrates having a pore size in microns such as Nylon, polyester, and cotton have been shown to develop microbial filtration properties. In this study, a simple method to filter bacteria using nylon is presented and the solutions are prepared using Autoclave and Laminar Air Flow Chamber. For checking the bacterial concentration in the underground water, a very small volume of sample was tested by keeping it in shaking Incubator. The results revealed that nylon filters were able to decrease the concentration of *E. coli* from a groundwater sample, with a higher removal efficiency achieved by using two membranes and a lower efficiency by using a single membrane. This study, therefore, suggests that the Nylon membrane demonstrated antibacterial activity against *E.Coli*. For the disinfection of groundwater, Nylon membrane can be used as a potential alternative cost-effective filter for production of safe drinking water.

Keywords: *E.Coli*, Nylon membrane, groundwater, surface water, bacteria

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INTRODUCTION

In developing countries, waterborne diseases have a negative impact on public health where the drinking water is of a poor quality¹. *Escherichia coli* are present in large numbers in the normal intestinal flora of humans and animals, where it generally causes no harm. However, in other parts of the body, *E. coli* can cause serious diseases, such as urinary tract infections, bacteremia and meningitis². The silver-impregnated porous pot filter (SIPP) can be recommended for use by rural communities as it consistently produced high-quality water that complied with the SANS 241 turbidity and microbiological limits for drinking water³. Various point-of-use (POU) water treatment methods, which include bio-sand and ceramic filtration, appropriate chemical disinfection (e.g. the use of disinfectants such as chlorine and iodine), solar disinfection and natural water purifiers (e.g. *Moringa oleifera*) have been reported to improve the microbial quality of drinking water as well as to decrease the incidence of endemic diarrhoea caused by waterborne pathogens⁴. The source of the microorganism was traced to the park's water supply, which had been contaminated with raw sewage and Enterotoxigenic *E.coli* was identified as the microorganism responsible for this outbreak⁵. The functionalized nano fiber structures have an effect on bacterial growth was confirmed by microbiological, physico-chemical and molecular biological analyses, such as the inoculation in a nutrient agar culture medium, flow cytometry, and real-time polymerase chain reaction⁶.

The silver-impregnated porous pot (SIPP) can be an effective and sustainable household water treatment devices/systems (HWTS) for the Southern African Development Community (SADC) rural communities, in the removal of the total concentration of bacteria from test water, manufactured using locally available materials, easy to operate and to maintain⁷.

NOVEL COMPLEXES OF RUTHENIUM(III) WITH SCHIFF BASES AND INDAZOLE – SYNTHESIS AND CHARACTERIZATION

S. Begić*, N. Ljubijankić, S. Gojak-Salimović and E. Osmić

Department of Chemistry, Faculty of Science, University of Sarajevo,

71000 Sarajevo, **Bosnia and Herzegovina**

*E-mail: baltazar.sabina@gmail.com

ABSTRACT

Two novel cationic Ru(III) complex compounds with Schiff bases, *N*-phenyl-5-*X*-salicylideneimine (where X = H or Br) and indazole have been synthesized and characterized by various spectral and electrochemical analysis. The existence of molecular ions M^+ at m/z 730.1652 and 887.9818 corresponding to $[C_{40}H_{32}N_6O_2Ru]^+$ and $[C_{40}H_{30}Br_2N_6O_2Ru]^+$, respectively, was obtained by mass spectra analysis. The coordination of the ligands in the Ru(III) octahedral environment occurs through imine nitrogen, deprotonated phenolic oxygen atom from the Schiff bases as well as *via* the free electronic pair on the nitrogen atom in indazole. Furthermore, the effect of the cationic Ru(III) complexes on the Briggs-Rauscher oscillating reaction was preliminary studied and monitored potentiometrically.

Keywords: Ru(III) complex, Schiff base, indazole, Briggs-Rauscher, oscillation

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INTRODUCTION

Schiff bases as a compound with azomethine linkage ($-C=N-$) are versatile and very popular ligands for metal coordination^{1,2}. Since Schiff bases show diverse biological activity, a significant number of metal complexes with various ligands have been synthesized and their activities against different targets have been investigated³⁻⁸. Antibacterial, antifungal, antiviral, antioxidant and cytotoxic activities have been reported^{1,9-12}. Ruthenium(III) complexes are of immense interest regarding their kinetic inertness¹³. Some ruthenium(III) complexes containing ON or ONS donor atoms were synthesized in our laboratory regarding interaction with DNA or genotoxic activity have been previously reported^{4,5,14}. Ru(III) complexes containing indazole, imidazolium *trans*-[tetrachlorobis(1H-indazole)ruthenate(III)] (KP1019) and sodium *trans*-[tetrachlorobis(1H-indazole)ruthenate(III)] (NKP-1339) have proofed an extraordinary antiproliferative properties and entered clinical trials¹⁵. The indazole ring system is a partial component of a huge number of biologically active compounds and most of them exhibit a broad spectrum of bioactivities^{16,17}. Interaction of cationic complex Ru(III) containing indazole and Schiff base derived from 5-chlorosalicylaldehyde and aniline with DNA by spectrophotometric titration according to the calculated binding constant indicated non-covalent binding and was described as a major groove binding¹⁸. In this study, synthesis, characterization and the effect on the Briggs-Rauscher oscillating reaction of new Ru(III) cationic complexes with indazole and Schiff bases derived from salicylaldehyde or 5-bromosalicylaldehyde and aniline were reported. This is a continuation of the research activities of the synthesis and characterization of ruthenium(III) complexes with Schiff bases and *N*-heterocycles.

EXPERIMENTAL

Materials and Methods

All chemicals were of analytical grade, purchased from commercial suppliers. The matrix-assisted laser desorption/ionization (MALDI) mass spectrometer, 4800 Plus TOF/TOF (time-of-flight) (Applied

**PHYTOCHEMICAL SCREENING AND ANTIMICROBIAL
EVALUATION OF ETHANOLIC-AQUA EXTRACT OF
Stachytarpheta jamaicensis (L.) VAHL LEAVES AGAINST SOME
SELECTED HUMAN PATHOGENIC BACTERIA**

Anthoney Swamy Thangiah

Senior Lecturer in Chemistry, Asia-Pacific International University, P.O. Box 4, Muak Lek,
Saraburi 18180, Thailand.

E-mail: drtanthony2011@yahoo.com

ABSTRACT

The study was carried out to evaluate phytochemical and antibacterial effect of ethanolic-aqua extract of *Stachytarpheta jamaicensis* leaves against four selected pathogenic bacterial organisms. Phytochemical analysis revealed the presence of secondary metabolites such as tannins, saponins, terpenoids, flavonoids, phenols, alkaloids, steroids and glycoside. The zones of inhibitions were 11.503 ± 0.005 for *B. cereus*, 10.766 ± 0.033 for *S. typhi*, 14.766 ± 0.033 for *P. vulgaris* and 13.566 ± 0.033 for *S. pyogenes* respectively. The zones of inhibitions of the microorganism such as *B. cereus*, *P. vulgaris* and *S. pyogenes* were larger than their positive control except *S. typhi*. Analysis of variance (ANOVA) showed that the organisms were significantly different in the zones of inhibition ($p < 0.05$). The inhibition of the plant leaves extract to the growth of all the organisms greatly depicts the plant leaves to have great potential against diseases caused by the organisms. The overall therapeutic activities of the extract might be due to the presence of various phytoconstituents. Further research need to be done to prove their *in vivo* environment.

Keywords: *Stachytarpheta jamaicensis*, phytochemical, antibacterial, medicinal, plant, leaves, microorganism.

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INTRODUCTION

Stachytarpheta Jamaicensis have been widely used by the people throughout the world for the various medicinal purposes. The plant grows 60–120 cm tall and has a smooth, dark green colored stem, which turns woody towards the base of the stem.¹ These plants normally reproduce flowers in a mix of bluish and pinkish color or could bear flowers with a purple to deep blue color. Its leaves are greyish green in color has a smooth surface, and have a round apex and distinct petioles. This plant mostly grows in the tropical regions of America and other subtropical forests such as in Nigeria, Europe, and Russia.² It is also widely distributed in acclimatized tropics such as those in Malaysia and Indonesia. *S. jamaicensis* referred to as “Jolok Cacing” or “Selasih Dandi” in these countries.³

The natural plants contain numerous medicinal values as well as nutraceuticals and phytochemicals uses. The folk medicine has been used for treating inflammatory disease, high blood pressure, hypertension etc.⁴ Many modern pharmaceuticals companies are using medicinal plants for various ailments since it has a good source of antioxidants for medical purposes.⁵ Since ancient time the traditional plants have been practiced, however, the isolation of active compounds such as morphine, quinine and alkaloids in the past two hindered years steered in the dawn of a new era in the use of medicinal plants and marked the beginning of modern research in the use of plants to cure diseases.⁶

About 80% of the population in some Asian and African countries still depend upon tradition herbal medicine for the prevention of many diseases. The use of medicinal plants as a fundamental component of the African traditional health care system is perhaps the oldest and most assorted of all the therapeutic systems.⁷

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