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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel) : Elemental Characterization Of Human Blood Using Laser-Induced Breakdown Spectroscopy Utilizing 355 Nm Nd: Yag Operated At Reduced Pressure Of He Gas

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- b. Nomor ISSN : 0974-1496
- c. Vol, No., Bln Thn : Vol 14, Desember 2021
- d. Penerbit : Rasayan Journal
- e. DOI artikel (jika ada) : 10.31788/RJC.2021.1445975
- f. Alamat web jurnal : <http://rasayanjournal.co.in/archiveissue.php?issueid=61>
- Alamat Artikel : http://rasayanjournal.co.in/admin/php/upload/3347_pdf.pdf
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Semarang, 5 Maret 2022

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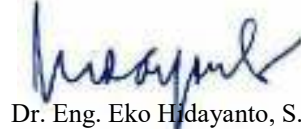
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Reviewer 2



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Rasayan Journal of Chemistry • Open Access • Volume 14, Issue 4, Pages 2413 - 2419 • October-December 2021

Document type

Article • Bronze Open Access

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Journal

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Elemental characterization of human blood using laser-induced breakdown spectroscopy utilizing 355 nm nd: Yag operated at reduced pressure of he gas

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Abstract

The human blood serum has often been used as a medium for diagnoses of various diseases based on elemental composition. In this paper, elemental identification and analysis of human blood serum have been performed using a standard LIBS technique utilizing 355 nm Nd: YAG laser under He surrounding

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Rasayan J. Chem.
ISSN (Print): 0974-1496
ISSN (Online): 0976-0083
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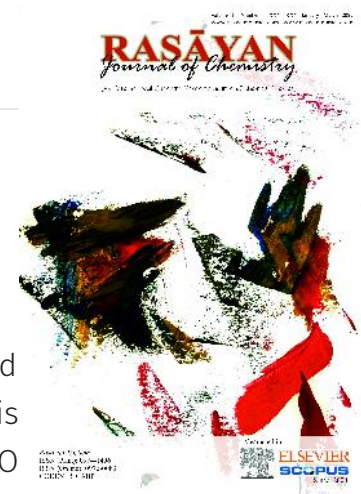


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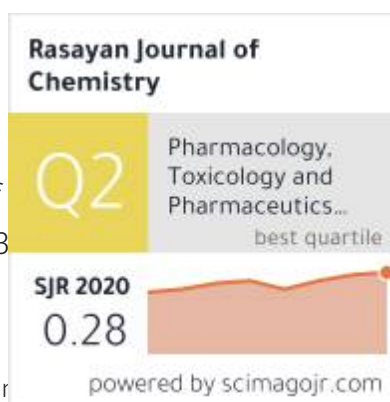
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Rasayan J. Chem.
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Volume 14 Number 4, 2161-2861, October- December(2021)

GENUS *Pothos*: A REVIEW OF CHEMICAL CONSTITUENTS AND BIOLOGICAL ACTIVITIES

— D. Dutta, M. J. Bordoloi, and N. K. Bhattacharyya

COAL MINING WASTE IS A VALUABLE SECONDARY RAW MATERIAL

— U. Nazarbek, P. Abdurazova, S. Nazarbekova, M. Kambatyrov and Y. Raiymbekov

GELATIN AS A CORROSION BIOINHIBITOR AT SALINE MEDIA FROM FISH BONE OF MACKEREL

— Fataa Kusumattaqiin, Bagus Agam Pradana, Abdul Halim

QBD BASED ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE SEPARATION AND
AGOMELATINE AND ITS IMPURITIES IN SOLID ORAL DOSAGE FORMS USING HPLC

— Somana Siva Prasad, Bikshal Babu Kasimala and Venkateswara Rao Anna

TWO STEP SYNTHESIS OF INDAZOLE DERIVATIVES AND THEIR ANTI-CANCER EVALUATION

— G. Laxman, Jagadeesh Kumar Ega and Kavitha Siddoju

[Bittu Saha, Bijeta Mitra, Subodip Mukherjee, Raju Subba, Dhiraj Dattamini, Biswajit Saha and Prasad Ghosh](#)

[ELEMENTAL CHARACTERIZATION OF HUMAN BLOOD USING LASER-INDUCED BREAKDOWN SPECTROSCOPY
355 NM Nd: YAG OPERATED AT REDUCED PRESSURE OF He GAS](#)

[A.Khumaeni, W.S.Budi, A.Y.Wardaya, R.Hedwig and K. H. Kurniawan](#)

[ISOLATION, CHARACTERIZATION AND ANTIDIABETIC ACTIVITY OF PHENOLIC COMPOUNDS ISOLATED FROM *Albizia*
magna TURRILL](#)

[Minarti, A.H. Cahyana and A. Darmawan](#)

[SYNTHESIS AND STUDIES ON AROMATIC COPOLYESTER WITH ANTICANCER ACTIVITY DERIVED FROM
DIHYDROXYBIPHENYL AND 3,5-DIHYDROXYTOLUENE](#)

[T. Sivaramakrishnan and G. Elango](#)

[OXIDATION KINETICS AND MECHANISTIC STUDIES OF THIOACIDS BY IMIDAZOLIUM DICHROMATE](#)

[Ruchi Kalla, Devendra Kumar, Anurag Choudhary and Vinita Sharma](#)

[1-\(3-ACETYL PHENYL\)-4-\(4-ARYLIDENE\)-2-PHENYL-1H-IMIDAZOL-5\(4H\)-ONES: SYNTHESIS, SPECTROSCOPIC
CHARACTERIZATION, ANTIMICROBIAL AND MOLECULAR DOCKING STUDIES](#)

[Y. Aparna, D. Sandhya, N. J. P. Subhashini and L. N. Sharada](#)

[IMPROVING MECHANICAL AND PHYSICAL PROPERTIES ON THERMOPLASTIC SAGO STARCH BASED FILMS BY
ADDITION OF POLYPROPYLENE](#)

[D.A. Tanjung, N. Iamarun, S. Arief, H. Aziz, A.H. Ritonga and B. Isfa](#)

[COMPARITIVE ANALYSIS OF NOX AND SMOKE EMISSIONS OF BINARY DIESEL/ JME BLENDS DOPED WITH
NANOPARTICLES STABILISED BY DEE AS SOLVENT AND TRITON-X100 and BRIJ58 SURFACTANT](#)

[N.S.C. Chaitanya, Y.V.V. SatyanarayanaMurthy, M.R.S. Satyanarayana, Surajith Ghosh and Syed Iaved](#)

[A REVIEW ON OLIVE OIL AND Nigella sativa L. BLACK CUMIN SEED OIL: COMPOSITION AND EFFECTS](#)

[Nesrain Farhan, Nadia Salih and Iumat Salimon](#)

[KINETIC STUDIES OF THE UNSATURATED ACIDS, OXIDISED BY PYRIDINIUMDICHROMATE: A MODEL REACTION](#)

[Varsha Bishnoi, Om Prakash and Pradeep K. Sharma](#)

GENUS *Pothos*: A REVIEW OF CHEMICAL CONSTITUENTS AND BIOLOGICAL ACTIVITIES

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ABSTRACT

Pothos is a genus of flowering plants that belongs to the family Araceae. It plays a vital role in developing countries as folk medicine. Numerous compounds have been reported from *Pothos*, out of which some compounds have shown prominent bioactivities. The biological studies of this genus reported various activities including antimicrobial, anticancer, antioxidant, antipyretic, anti-diabetes, bronchodilator, burn wound healing, anti-cariogenic, thrombolytic etc. This review summarizes research carried out on chemical constituents with biological activities of *Pothos* genus to date.

Keywords: *Pothos scandens*, *Pothos chinensis*, Phytochemistry, Anticancer, Antimicrobial.

RASAYAN J. Chem., Vol. 14, No.4, 2021

INTRODUCTION

The genus *Pothos* belongs to the family Araceae comprises 65 species of root-climbing lianes found in subtropical and tropical forests. It is distributed around the world from the Indian subcontinent to various islands of Indian Oceans and also native to China, Australia and Southeast Asia.¹⁻² Linnaeus (1753, 1763) and Schott (early in the 19th century) described this genus as climbing aroids with bisexual flowers.³ It has been used in folk medicine throughout the world for various ethno medicinal uses.⁴⁻⁹ Various phytochemical studies on the genus reported that it contains both primary and secondary metabolites. The preliminary phytochemical screening reported several secondary metabolites from the different parts of this plant.¹⁰⁻¹⁵ Numerous compounds have been reported from this genus. The extracts, essential oils and the compounds isolated from various species of *Pothos* exhibited several biological activities, including antimicrobial, antioxidant, antipyretic, anti-diabetes, bronchodilator, burn wound healing, anticariogenic, thrombolytic, anticancer, peritoneal mast cell stabilization, hyaluronidase inhibitory, histamine release inhibiting activities.¹⁶⁻⁵⁰ Despite the presence of several biological activities, only a few species from this genus were studied for the isolation of compounds. Moreover, the biological and other phytochemical studies in most of the species are still missing.

There is an increase in the trend of studying isolated compounds from a natural source in recent years due to their wide range of activities that could lead to the identification of promising lead compounds.⁵¹⁻⁵³ In this review, the phytochemistry and biological activities of various species belonging to the genus *Pothos* are described. It includes a detailed classification of phytoconstituents and a systematic analysis of the biological activities reported in the literature till 2020. A total of 89 phytoconstituents comprised of alkaloids, terpenoids, phytosterols, flavonoids, glycosides, long-chain derivatives, and miscellaneous compounds are listed in this review.

EXPERIMENTAL

The authors collected data from Science Direct, SciFinder, Google Scholar, and PubMed related to *Pothos* genus. The authors reviewed and interpreted the articles of isolated compounds with biological activities against including antimicrobial, anticancer, antioxidant, antipyretic, anti-diabetes, bronchodilator, burn wound healing, anti-cariogenic and thrombolytic.

COAL MINING WASTE IS A VALUABLE SECONDARY RAW MATERIAL

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and Y. Raiymbekov✉

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ABSTRACT

The article presents the results of complex studies of physical and chemical properties, such as sieve analysis, elemental and microstructural analysis, IR spectral analysis, and X-ray phase analysis. The results of the research allow concluding that coal mining waste is a valuable secondary raw material for the production of new multi-purpose materials in the chemical and construction industries. Data obtained by scanning electron microscopy revealed the elemental composition of coal mining waste. As it turned out, the composition of the waste is dominated by carbon, silicon and iron. In addition, there are microelements in the form of magnesium, sulfur, and aluminum. All the data obtained will be used for the synthesis of humate-containing substances.

Keywords: Coal Mining Waste, Technogenic Waste, Humic Substances, Chemical Industry.

RASAYAN J. Chem., Vol. 14, No. 4, 2021

INTRODUCTION

The future of humanity largely depends on how environmental problems are solved today, the problems of harmonizing economic development with the preservation of the integrity of natural ecological systems and the entire diversity of life on Earth. It is obvious that at present, to solve environmental problems, problems of interaction between society and the environment, it is not enough to have only a system of authorized state bodies. We need a universal ecological culture so that all citizens of any country have an awareness of their responsibility to future generations.

The most important task of chemical technology is the rational use of natural resources using environmentally non-waste, resource-saving technologies.¹

The main environmental problem in coal mining is the formation of a large amount of solid waste. During the construction of coal industry enterprises, especially open-pit mines and dumps, significant areas of the earth's surface are subject to changes. In particular, there is the removal of soil cover, the reduction of agricultural and forest land, the destruction of vegetation. To compensate for such damage, after the completion of mining operations, the disturbed land must be subjected to restoration work.²

In particular, waste rock dumps should be used, if possible, for laying the worked-out space. Technical and biological remediation should be carried out about the remaining dumps after laying.³

Kazakhstan's coal industry is one of the vital areas in the country's energy security. Kazakhstan is one of the ten countries with the largest coal deposits in the world. Kazakhstan's coal reserves are currently estimated at approximately 33 billion tons, which is about 4% of the world's reserves. At the same time, 62% of the deposits are brown coal, and 38% - stone coal.⁴

Coal mining in Kazakhstan begins in the middle of the XIX century during Tsarist Russia. It was then that the first deposits of brown coal were explored in the Southern region of Kazakhstan. From this time until the 60s of the last century, one of the largest deposits was Lenger. The reserve of the balance part of this field is more than 30 thousand tons. As a result of coal mining, more than 6 million tons of wastes were generated⁵. A large amount of these types of waste is located on the territory of the city in the form of landfills (Fig.-1).

The main components of coal mining waste, according to the literature data⁶⁻⁸, are organic and inorganic substances. The composition contains compounds such as silicon, aluminum and calcium-containing substances. Functional groups in the composition of waste represent its organic part.