



Virtual Conference on Chemistry and its Applications

Chemical Sciences for the New Decade

9 - 13 August 2021

Virtual Conference on Chemistry and its Applications

9th to 13th August 2021

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ISBN: 978-999-99949-783-0

Table of Contents

Page

Welcome Message	xix
Endorsement of VCCA-2021	xx
Sponsors of VCCA-2021	xxi
Organising Committee of VCCA-2021	xxii
International Advisory Committee of VCCA-2021	xxiii
Disclaimer	xxiv

Nobel Laureate Presentation

NLP-1	Chemical Topology: Interlocking and Knotted Rings <i>J.-P. Sauvage</i>	1
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Keynote Presentations

KP-1	Multivariate Design of Experiment for Iron Oxide Nanoclusters <i>M. Nedyalkova</i>	2
KP-2	Chasing Singlet Fission Chromophores for Organic Photovoltaics <i>L. Borislavov, M. Nedyalkova, J. Stoycheva, A. Tadjer and J. Romanova</i>	3
KP-3	Optimal Design of Molecules with Unusual Chemical Bonding <i>L. Zhao, H. W. Roesky, T. G. Ong and G. Frenking</i>	4
KP-4	Extending the Concept of Catalysis by Pristine 2D Materials <i>A. Karton</i>	5
KP-5	Chemical Approaches for Discovering the Biology and Biomechanics of Fossil Animals <i>G. Dyke</i>	6
KP-6	Reverse Pharmacology and Systems Approaches for Chemical Biology, Drug Discovery and Development: Inspiration from the Wisdom of Mother Nature <i>M. S. Chorghade</i>	7
KP-7	Beyond Names and Registry Numbers: Curation and Structural Annotation of Lists of Controlled Chemicals of Security Concern <i>S. Costanzi, C. K. Slavick, J. M. Abides, M. Vecellio, G. D. Koblenz and R. T. Cupitt</i>	8
KP-8	The Use of Some Organotin(IV) as Candidate for Disinfectant <i>S. Hadi, T. Suhartati and Yandri</i>	9
KP-9	Engineering of Polyolefin Materials for Sustainable World <i>V. K. Gupta</i>	10

KP-10	Historical Highlights of Hydrogen <i>Z. A. Szydło</i>	11
KP-11	The Role of Nanotechnology in Advancing the 4 th Industrial Revolution: A Case Study of Water Quality Monitoring and Treatment <i>J. C. Ngila</i>	12
KP-12	Discovery of Tight-Binding Competitive Inhibitors of Dipeptidyl Peptidase IV (DPP-IV) <i>I. Pascual Alonso, P. A. Valiente, M. E. Valdés-Tresanco, Y. M. Arrebola, L. Díaz, G. García, O. Guirola, D. Pastor, B. Sánchez and J. L. Charli</i>	13
KP-13	Chemical Substitution for Safer Products and Process Operations <i>S. R. Syeda</i>	14
KP-14	Dative Bonding in Main-Group Compounds <i>G. Frenking</i>	15
KP-15	Intriguing Properties of Radioactive Molecules <i>R. Berger</i>	16
KP-16	Traditional uses, Phytochemistry, Pharmacology and Other Potential Applications of <i>Vitellaria paradoxa</i> Gaertn. (Sapotaceae): A Review <i>O. Ojo, E. M. Mmutlane and D. T. Ndinteh</i>	17

Presentations

P-1	Rheological Behaviors of Macromolecular Matrix Epoxy Bi-functional Aromatic Amines: Experimental and Computational Studies <i>O. Dagdag, Z. Safi, M. El Bouchti, N. Wazza and M. El Gouri</i>	18
P-2	Natural Products as Potential Inhibitors against SARS-CoV-2: Molecular Docking Study <i>M. Nedyalkova and V. Simeonov</i>	19
P-3	Development of New Chitosan/Graphene Oxide Composites for Neural Tissue Regeneration <i>Y. Solís, G. Panella, G. Fioravanti, F. Perrozzi, M. Passacantando, E. Centi, G. Tudico, L. Ottaviano, A. Cimini, C. Peniche and R. Ippoliti</i>	20
P-4	Catalytic Oxyfunctionalisation of 1,2-Dichlorobenzene using Mn Loaded Catalysts and Ozone <i>V. S. R. Pullabhotla</i>	21
P-5	Health Risk Assessment of Heavy Metal Exposures through Edible Clay from South-Eastern and South-Southern Nigeria <i>H. I. Kelle, J. K. Nduka, P. I. Udeozo and M. C. Ubani</i>	22

P-6	Heavy Metals Contamination of Solid Waste Disposal Site in Umuahia, Abia State <i>E. C. Ogoko</i>	23
P-7	Nephridines in Women with Obesity: Exploratory Data Analysis <i>M. Nedyalkova, R. Robeva and V. Simeonov</i>	24
P-8	Theoretical Study of the Chemical Modification of Poly(epichlorohydrin) by Grafting Menthol <i>R. Hadjadj Aoul, F. Bousta, F. Z. Sebba and K. Belabed</i>	25
P-9	Exploring Chemistry, Physics and Biology Teachers' Conceptualisation of the 'Social Relevance' of Science Education at the Lower Secondary Level <i>R. Rajkomar, F. Narod and M. Price</i>	26
P-10	Biophysical Studies on a Novel Iridium(III) Polypyridyl Complex, [[2,2'-Bipyridyl) ₂ Ir(2,2':4,4":4',4'''-quaterpyridine)] ³⁺ <i>S. O. Aderinto and J. A. Thomas</i>	27
P-11	Multivariate Statistical Survey of a Questionnaire for Diabetes Mellitus Type 2 Risk <i>M. Nedyalkova, J. Romanova and V. Simeonov</i>	28
P-12	Extraction, Chemical Characterization and Anti-Oxidant Analysis of Essential Oil from <i>Eucalyptus globulus</i> Medicinal Plant Cultivated in Botswana <i>N. Phiri, E. Serame and T. Pheko-Ofithile</i>	29
P-13	Neutralization of Sodium Dichloroisocyanurate Induced Chlorination of Polluted Water Sample by Ascorbic Acid (Vitamin C) <i>O. H. Olabimtan, M. L. Batari, S. A. Florence, D. J. Sunday and S. O. Yakubu</i>	30
P-14	Cocoyam Leaves (<i>Colocasia esculenta</i>), a Synergistic Green Corrosion Inhibitor Extract on Mild Steel in 0.5 M HCl <i>K. E. Leizou</i>	31
P-15	Phytochemical and Antimicrobial Analysis of the Aerial Parts of <i>Mentha spicata</i> L. <i>M. O. Shoge, A. A. Tamasi, A. Oluwatosin, T. T. Adegboyega and J. S. Nuhu</i>	32
P-16	Probing the Mercury Cation Electrochemical Sensing Capabilities of a Gold Electrode Containing Cobalt Phthalocyanine Self-Assembled Monolayer and 3-Hexylthiophene Polymeric Films <i>K. Kantize, I. N. Booysen and A. Mambanda</i>	33
P-17	Linking Phytochemistry to Traditional Uses and Pharmacology of an Underexplored Genus – <i>Psydrax</i> : A Review <i>U. M. Chukwudulue, A. F. Attah and F. B. C. Okoye</i>	34
P-18	Physicochemical and Heavy Metals Characteristics of Harvested Rainwater Stored in a Concrete-Made Reservoir in Uromi Community, in Edo State, Nigeria <i>C. S. Ugah, R. E. Nnam, O. N. Ahamefula and C. O. Oji</i>	35

P-19	Definite Model to the Determination of Bitumen Specific Gravity as a Baseline in Construction <i>O. H. Olabimtan, J. M. Garba, S. A. Florence and K. J. Otsa</i>	36
P-20	Mechanistic Aspect for the Atom Transfer Radical Polymerization of Itaconimide Monomers with Methyl Methacrylate: Computational & Experimental Studies <i>C. Deoghare</i>	37
P-21	Antibacterial, Anti-Oxidant and Sun Protection Potential of Selected Ethno Medicinal Plants Used for Skin Infections in Uganda <i>J. Namukobe, P. Sekandi, R. Byamukama, M. Murungi, J. Nambooze, Y. Ekyibetenga, C. B. Nagawa and S. Asiimwe</i>	38
P-22	A Computational Approach to Design of Organometallic Ru(II) Compounds with Potential Anticancer Properties <i>A. Kuznetsov, R. Ortiz and A. Thomet</i>	39
P-23	Base Activation of Muscovite/ Kaolinite Clay for the Adsorption of Lead(II) Ions from Aqueous Media <i>S. Tetteh</i>	40
P-24	Investigation of Corrosion Inhibition of Some Aminopyridine Schiff Bases using Density Functional Theory <i>O. E. Oyeneyin, N. D. Ojo, N. Ipinloju and J. C. Akinwumi</i>	41
P-25	Synthesis, Molecular Modelling (<i>in silico</i>) and Biological Study of Varilyngly Substituted Chalcone Derivatives for their Enzyme Inhibition, Anti-Oxidant and Antimicrobial Potentials <i>A. T. Bale</i>	42
P-26	<i>n</i> -Hexadecanoic Acid: An Anti-Inflammatory Compound Identified in the <i>Crinum jagus</i> Bulb by GC-MS <i>T. T. Alawode, L. Lajide, B. J. Owolabi and M. T. Olaleye</i>	43
P-27	Zero, (One), Two and Three Dimensions of Chemical Bonding <i>R. Tonner</i>	44
P-28	Inhibition of Three Membrane Ectopeptidases, Dipeptidyl-Peptidase-IV, Neutral Metallo-Aminopeptidase and Acid Metallo-Aminopeptidase (Anticancer Targets), by the Peptidic Inhibitor Bacitracin: Preliminary Effect on Different Tumor Lines <i>Y. M. Arrebola, L. Rivera, L. Díaz, R. McWhire, B. Sánchez, G. Bergado, F. Almeida, A. Pedroso, J. L. Charli and I. Pascual Alonso</i>	45
P-29	Understanding the Lithiation Mechanism of Pyrenetetrone-Based Carbonyl Compound as Cathode Material for Lithium-Ion Battery: Insight from DFT and QTAIM Analyses <i>H. Louis, P. M. Utsu, V. M. Basse and T. E. Gber</i>	46

P-30	The Flame Test Demonstration Reimagined <i>J. P. Canal, R. D. Sharma and H. N. Taylor</i>	47
P-31	Antimalarial, Antibacterial and Phytochemical Contribution of <i>Prosopis africana</i> Stem Bark Methanolic Extract <i>M. I. Bunu, M. H. Garba, M. T. Charlotte, M. C. D. Fotsing and D. T. Ndinteh</i>	48
P-32	Review on the Application of <i>N</i> -(4-Nitrobenzylidene)naphthalen-1-amine Schiff Base: Prospects and Potentials <i>B. I. Yerima</i>	49
P-33	Sustainable Application of Treated Sewage Water for Irrigation in Domestic and Small Area Cultivation <i>P. K. Sharma</i>	50
P-34	Quantitative Kinetic Analysis of Micelle-Catalyzed Reaction between Ternary Labile Complex of [Cu(II)-Gly-Leu] ⁺ and Ninhydrin <i>N. H. Zaidi and M. Akram</i>	51
P-35	Synthesis, Characterization and Anticancer Study of Asymmetrical Dinuclear Silver(I) Di- <i>N</i> -Heterocyclic Carbene Complexes <i>M. Z. Nazri, R. A. Haque, B. Cilwyn, S. Sasidharan and M. R. Razali</i>	52
P-36	Phytochemical and Anti-Oxidant Studies of <i>Hibiscus cannabinus</i> Seed Oil <i>E. M. Halilu</i>	53
P-37	Activation of Hydrotalcite Mg–Al by Zr Catalyst for Oxidation of Furfural <i>N. Dib, G. Berrahou, R. Bachir, S. Bedrane, G. B. Montilla and J. J. C. Gamez</i>	54
P-38	Fascinating Adventures in Science Entrepreneurship: A Personal Perspective <i>M. S. Chorghade</i>	55
P-39	Crystal Structure Characterization and DFT Insights into a Thiazole Derivative <i>P. Akhileshwari and M. A. Sridhar</i>	56
P-40	Effect of Palygorskite in the Stabilization of the Metastable Hexagonal Ag ₂ CO ₃ Phase in Ag ₂ CO ₃ /Pal Nanocomposites and their Photocatalytic and Antibacterial Activities <i>S. Ghazi, B. Rhouta, F. Maury, C. Tendero and N. Mezrioui</i>	57
P-41	Emerging Role of miRNAs in Breast Cancer Diagnosis and Therapy <i>A. Fajeminsin, B. Obadawo and A. Abdullahi</i>	58
P-42	Synthesis and Characterization of Alkaloid-Derived Hydrazones and their Metal(II) Complexes <i>M. Sowemimo and A. Adeniyi</i>	59

P-43	Investigation on Electronic Structure, Vibrational Spectra, NBO Analysis and Molecular Docking Studies of Aflatoxins and Selected Emerging Mycotoxins against Wild-type Androgen Receptor <i>J. A. Agwupuye, H. Louis, B. I. Onyebuenyi and K. M. Etiowo</i>	60
P-44	DFT Study of the Factors Governing the Competition between Groups IA and IB Cations for Salinomycin <i>T. Dudev, D. Cheshmedzhieva and I. Pantcheva</i>	61
P-45	Chemical Constituents and Antibacterial Activity of Leaf Extract of <i>Lecaniodiscus cupanioides</i> Planch. ex Benth <i>O. Ojo, E. M. Mmutlane, and D. T. Ndinteh</i>	62
P-46	Characterization of the Fusion Protein SARS-CoV-2 Spike Protein (RBD)-hFc Used in Diagnostic Kits for COVID-19 UMELISA-SARS-CoV-2-IgG <i>J. Gómez, I. Ruíz and L. García</i>	63
P-47	Isolation and Characterization of the Phytochemicals of the Ethanolic Extract of the Leaves of <i>Morinda lucida</i> <i>D. C. Nwokonkwo and E. I. Nwafor</i>	64
P-48	The International Younger Chemists Network (IYCN): Connecting, Supporting, Advocating and Empowering Early-Career Chemists Globally <i>S. O. Aderinto, L. Ferrins, J. Borges and L. van Gijzel</i>	65
P-49	Molecular Modelling Approach of Serine Protease NS3-4A Genotype 3a as a Potential Drug Target of Hepatitis C Virus <i>R. Hussain, H. Khalid and M. Q. Fatmi</i>	66
P-50	Antibacterial, Anti-Oxidant and Cytotoxic Activities of the Stem Bark of <i>Archidendron jiringa</i> (Jack) I. C. Nielsen <i>Noviany, U. Khasanah, P. D. N. Lotulung and S. Hadi</i>	67
P-51	Advancements in Cancer Nanotechnology: Focus on Nanodiagnostics and Nanotherapeutics <i>A. Fajeminsin, B. Obadawo, A. Abdullahi and U. Asogwa</i>	68
P-52	The Adsorption of Ni _n (n = 2-7) on the Surface of γ -Al ₂ O ₃ : <i>Ab initio</i> Molecular Dynamics Simulation Study Bonding <i>A. Adda and M. Sehailia</i>	69
P-53	Copper(II) Complex of the Polyether Ionophorous Antibiotic Monensic Acid A <i>I. Pantcheva and R. Stamboliyska</i>	70
P-54	Pharmaceutical Cocrystals Consisting of Ascorbic Acid and <i>p</i> -Aminobenzoic Acid <i>F. Miles, F. Djellouli and A. Dahmani</i>	71

P-55	Decoding the Reaction Mechanism of the Cyclocondensation of Ethyl Acetate 2-Oxo-2-(4-oxo-4 <i>H</i> -pyrido[1.2- <i>a</i>]pyrimidin-3-yl)polyazaheterocycle and Ethylenediamine using Bond Evolution Theory <i>M. B. Maraf, A. A. Idrice, M. A. M. Pélagie, A. A. A. Zintchem, G. Bebga and M. N. Ibrahim</i>	72
P-56	Assessment of the Impact of the Red Mud from the Kimbo Alumina Plant (Republic of Guinea) on the Water Resources of the Area, and its Use for the Purification of Wastewater <i>B. M. Constance, A. A. Konaté, C. Mamady and C. A. Sekou</i>	73
P-57	Heavy Metals Level in Cabbage and Kale from Local Mozambican Markets and Assessment of Potential Health Risks <i>V. Munyeshuri, J. S. Mandlate, N. J. Gulamussen and E. F. C. Chauque</i>	74
P-58	Synthesis, Characterization and Anticancer Application of Platinum(II) Thiosemicarbazone Complexes <i>J. Nehema, R. A. Odhiambo, L. W. Njenga, M. Meyer, L. T. Swartz and M. O. Onani</i>	75
P-59	Functionalization of the Selected Alkaline Earth Metal Oxides (MO) with Alkaline Metal Oxides (N ₂ O) Lead to Increase Basicity Mixed Oxides MON ₂ O <i>D. Faron, P. Skurski and I. Anusiewicz</i>	76
P-60	Production of Paints and Varnishes from an Environmental Perspective and the Concept of Sustainable Development in the EU <i>P. Flasińska and R. Kadłubiak</i>	77
P-61	Reaction Mechanisms of 4-Hydroxy-5-phenyl-2-phenylethynyl-6 <i>H</i> -1,3-oxazin-6-one with Hydrazine and Ethanol from the Perspective of Molecular Electron Density Theory <i>M. B. Maraf, N. N. Charnel, A. A. Idrice, T. F. H. Merlin, G. Bebga and M. N. Ibrahim</i>	78
P-62	Undergraduate-Level Organic Synthesis Instructional Setup: Preparation of a Grignard Reagent and the Synthesis and Partial Characterization of Cyclohexyl(phenyl)methanone and (Cyclohexylmethyl)benzene <i>D. Abaye and D. Kabotso</i>	79
P-63	Isolation and Characterization of a Chemical Component from the <i>Anonidium mannii</i> Stembark <i>P. Jiyane, E. M. Mmutlane and D. T. Ndinteh</i>	80
P-64	Computational Study of Cu _n AgAu (n = 1–4) Clusters Invoking DFT-Based Descriptors <i>S. Das, P. Ranjan and T. Chakraborty</i>	81

P-65	Simultaneous Remediation of Polyaromatic Hydrocarbon and Heavy Metals in Waste Water with Zerovalent Iron-Titanium Oxide Nanoparticles (ZVI-TiO ₂) <i>P. Mensah and T. Osobamiro</i>	82
P-66	Isolation and Characterization of Some Flavonoids from <i>Staudtia kamerunensis</i> (Warb.) Fougilloy (Myristicaceae) <i>J. Tonga Lembe, D. T. Ndinteh, E. M. Mmutlane and A. E. Nkengfack</i>	83
P-67	Oleanolic Acid, a Promising Scaffold for the Design of Biologically Active Hybrid Compounds <i>V. Khwaza, O. O. Oyedeji, B. A. Aderibigbe, E. Morifi, Y. T. Fonkui, D. T. Ndinteh, M. Nell and V. Steenkamp</i>	84
P-68	Photovoltaic Properties of Novel Reactive Azobenzquinoline: Experimental and Theoretical Investigations <i>E. A. Eno, A. T. Etim, H. Louis, F. C. Asogwa and T. O. Unimuke</i>	85
P-69	Evaluation of Antibacterial Activities and Phytochemical Constituents of the Stem Bark of <i>Cola lateritia</i> K. Schum. (Sterculiaceae) <i>M. H. K. Kamdem, E. M. Mmutlane and D. T. Ndinteh</i>	86
P-70	RCDPeaks: Memory-Efficient Density Peaks Clustering of Long Molecular Dynamics <i>R. González-Alemán, D. Platero-Rochart, E. W. Hernández-Rodríguez, J. Caballero, F. Leclerc and L. M. Cabrera</i>	87
P-71	Determination of Heavy Metal Concentrations in the Sediment of Okeafa Canal Lagos State, Nigeria <i>C. Nnodum and K. Yusuf</i>	88
P-72	Novel Mixed Complexes of Zn(II) and Ag(I) with Heterocyclic Ligand: Synthesis, Characterization and Biological Activity <i>N. Tidjani-Rahmouni</i>	89
P-73	First-Principles Calculation of the Structural and Electronic Properties of III-Ga-V (III = In and Al; V = N and As) Semiconductors for Photovoltaic Cells <i>I. D. Arellano-Ramirez, S. A. Roncancio and E. Restrepo-Parra</i>	90
P-74	DFT Studies of Donor-Acceptor-Donor (D-A-D) Carbazole-Based Conjugated Polymer for Solar Cell Application <i>N. S. Babu, S. H. Vuai and S. Katundu</i>	91
P-75	Lupeol and Plumbagin Target Phosphorylated Microtubule-Associated Protein Tau (MAPT) in <i>in silico</i> Molecular Docking Studies <i>A. H. Ahmed</i>	92

P-76	Early Transition Metallophthalocyanine Alkoxide and Hydroxide Complexes <i>Y. Ganga-Sah and D. B. Leznoff</i>	93
P-77	Antimicrobial and Phytochemical Analysis of <i>Petivera alliaceae</i> L. Root Fractions and Volatile Oil <i>O. Oyesiku, M. Odunowo, S. Alli-Balogun, U. Oketade and E. Adesanya</i>	94
P-78	The Cytotoxic and Antibacterial Assays of Artonin E Isolated from the Branch Bark of the <i>Artocarpus kemando</i> Miq. <i>T. Suhartati, V. Andini, Yandri, and S. Hadi</i>	95
P-79	Extended Undoped and BN-Doped Dibenzotriphenylene: Modulation of Reactivity and Electronic Properties <i>B. Saha and P. K. Bhattacharyya</i>	96
P-80	Method Development for the Determination of Pesticides in Raw Food Items from Local Markets in Mozambique <i>S. L. Muiambo, N. J. Gulamussen and E. F. C. Chauque</i>	97
P-81	Anti-Oxidant Activity of β -Cyclodextrin-Assisted Extraction of Green Rooibos (<i>Aspalathus linearis</i>) <i>L. N. Vhangani, L. C. Favre, G. Rolandelli, J. van Wyk and M. P. Buera</i>	98
P-82	Synthesis of Polymeric Biohybrids of Aloe Vera-PVP and “Smart” Triiodides <i>Z. Edis, S. H. Bloukh and H. A. Sara</i>	99
P-83	The Stability Increase of α -Amylase Enzyme from <i>Aspergillus fumigatus</i> Using Dimethyladipimidate <i>Yandri, Nurmalia, T. Suhartati, H. Satria and S. Hadi</i>	100
P-84	<i>In Silico</i> Analysis of the SARS-CoV-2 Main Protease Inhibition by Selected Bioactive Compounds of <i>Phyllanthus niruri</i> and <i>Xylopiya aethiopica</i> <i>A. A. Kayode, O. O. Ogunyemi, O. T. Kayode, A. O. Dogubo, B. T. Ogunyemi and M. P. Ngoepe</i>	101
P-85	Host-Guest Complexation of the <i>Anonidium mannii</i> Stem Bark DCM/MeOH Extract by β -Cyclodextrin Inclusion Complex for Oral Administration <i>A. T. Moroeng, E. M. Mmutlane and D. T. Ndinteh</i>	102
P-86	RuO ₂ -Doped KNaMnSi ₄ O ₁₀ as an Electrochemical Energy Storage (EES) Material of Supercapattery Type <i>G. Muungani, M. N. Pillay and W. E. van Zyl</i>	103
P-87	Antibreast Cancer Activities of Phytochemicals from <i>Anonna muricata</i> Using Computer-Aided Drug Design (CADD) Approach <i>M. Abdul-Hammed, I. O. Adedotun, K. M. Mufutau, B. T. Towolawi, T. I. Afolabi and C. O. Irabor</i>	104

The Use of Some Organotin(IV) as Candidate for Disinfectant

S. Hadi*, T. Suhartati and Yandri

Department of Chemistry, University of Lampung, Bandar Lampung, Indonesia

*Author for correspondence e-mail: sutopo.hadi@fmipa.unila.ac.id

The interest in organotin(IV) carboxylates and their derivatives continues to attract many chemists as these compounds are very active and have strong biological activity [1] and they have been tested as anticancer [2,3], antimalarial [4], antibacterial [5], antifungi [6] and anti-oxidants [7]. In our previous work, the synthesis and some activity studies of organotin(IV) benzoates were reported [3-6]. In this work, we reported the potential use of some diphenyltin(IV) benzoate derivatives as disinfectant. Two bacteria, a gram-positive *Staphylococcus aureus* and a gram-negative *Salmonella* sp. were used *in vitro* in the disinfectant test with concentration variations of 5×10^{-3} , 1×10^{-3} and 5×10^{-4} M and contact time of 5, 10 and 15 min were performed using a control positive of a strong and common commercial disinfectant available in the market. The disinfectant activity was determined by measuring their optical density using UV-Vis spectrophotometer at λ_{\max} 600 nm. The results indicated that the eight diphenyltin(IV) benzoate derivatives synthesized showed much stronger disinfectant activity compared to the control positive as shown by a bigger decrease of their absorbance in the UV-Vis. Therefore, these diphenyltin(IV) benzoate compounds have the potential to be used as future disinfectant.

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**Antibacterial, Anti-Oxidant and Cytotoxic Activities of the Stem Bark of
Archidendron jiringa (Jack) I. C. Nielsen**

Noviany^{1*}, U. Khasanah¹, P. D. N. Lotulung² and S. Hadi¹

¹*Department of Chemistry, University of Lampung, Indonesia*

²*Center for Chemical Research, Indonesian Institute of Sciences (LIPI), Indonesia*

*Author for correspondence e-mail: noviany@fmipa.unila.ac.id

Archidendron jiringa (Jack) I. C. Nielsen is a species of the genus *Archidendron*, including the Fabaceae family which is known as *Jengkol*. *Jengkol* contains secondary metabolites that exhibited biological activities, such as antibacterial, antifungal, anticancer and anti-oxidant properties. This study has been carried out on extraction and fractionation of *A. jiringa* stem bark and tested the antibacterial, cytotoxic and anti-oxidant activity of the extract and fraction of *jengkol* stem bark. Extraction and fractionation are conducted in several steps, including sample preparation, maceration and fractionation using vacuum liquid chromatography and column chromatography. The results of bioactivities tested performed that among three extracts obtained, ethyl acetate extract showed the most activity against *B. subtilis* and *E. coli* by using disc diffusion method. In addition, the toxicity screening displayed that all tested extracts and fractions were toxic with the LC₅₀ values ranging of 250–750 ppm. Furthermore, all extracts and fractions showed good anti-oxidant activity with the IC₅₀ values ranging of 0.740–7.203 ppm.

The Cytotoxic and Antibacterial Assays of Artonin E Isolated from the Branch Bark of the *Artocarpus kemando* Miq.

T. Suhartati*, V. Andini, Yandri, and S. Hadi*

*Department of Chemistry, Faculty of Mathematics and Natural Sciences, University of Lampung,
Bandar Lampung, Lampung 35145, Indonesia*

*Authors for correspondence e-mails: tati.suhartati@fmipa.unila.ac.id (T. S.); sutopo.hadi@fmipa.unila.ac.id (S. H.)

Artocarpus kemando Miq. is one of Indonesia's endemic plants which is rich in flavonoid compounds and has a lot of bioactivity. From the branch bark of this plant obtained from Karang Anyar, Klaten, Penengah, South Lampung, Indonesia, a flavonoid compound, artonin E was isolated. This compound was identified by TLC using standard compounds, and its UV-Vis and IR spectra were compared with literature data. Cytotoxic test using leukemia cells P-388, the isolated artonin E showed strong anticancer activity with IC₅₀ of 1.56 µg/mL, whereas in the antibacterial test against *Bacillus subtilis* and *Escherichia coli*, this compound showed a moderate antibacterial activity.

The Stability Increase of α -Amylase Enzyme from *Aspergillus fumigatus* Using Dimethyladipimidate

Yandri*, Nurmalia, T. Suhartati, H. Satria and S. Hadi*

Department of Chemistry, Faculty of Mathematics and Natural Sciences, University of Lampung, Bandar Lampung, Lampung 35145, Indonesia

*Authors for correspondence e-mails: yandri.as@fmipa.unila.ac.id (Y.); sutopo.hadi@fmipa.unila.ac.id (S. H.)

This study aims to increase the stability of the α -amylase enzyme from *Aspergillus fumigatus* using dimethyladipimidate (DMA). The research stages carried out included production, isolation, purification, modification and characterization of native enzyme and after the addition of DMA. The enzyme activity was determined by the Fuwa and Mandels method, while the protein content was determined by the Lowry method. The results showed that the native enzyme has a specific activity of 7010.42 U/mg, an increase of 7.8 times compared to the crude extract of the enzyme which has a specific activity of 904.38 U/mg. The native enzyme has an optimum pH of 5 and an optimum temperature at 55 °C. The native enzyme has a residual activity of 17.17% after incubation for 60 minutes at 55 °C, and a half-life of 25.86 min. Enzymes after addition of DMA with a concentration of 0.5, 1 and 1.5% has an optimum pH of 5.5 and an optimum temperature of 65 °C. After incubation for 60 minutes at 65 °C, these modified enzymes have residual activity of 54.17, 46.18 and 34.44%, half-lives of 85.55, 58.25 and 37.46 minutes, respectively. The addition of DMA to the native α -amylase obtained from *A. fumigatus* was able to increase the stability of the modified enzymes between 1.5 and 3.3 times compared to the native enzyme as indicated by the increase in their half-lives.