



**KOMISI ETIK PENELITIAN
FAKULTAS KEDOKTERAN HEWAN UNIVERSITAS AIRLANGGA
*Animal Care and Use Committee (ACUC)***

**KETERANGAN KELAIKAN ETIK
“ ETHICAL CLEARANCE ”**

No : 1.KE.127.07.2019

**KOMISI ETIK PENELITIAN (ANIMAL CARE AND USE COMMITTEE)
FAKULTAS KEDOKTERAN HEWAN UNIVERSITAS AIRLANGGA SURABAYA,
TELAH MEMPELAJARI SECARA SEKSAMA RANCANGAN PENELITIAN YANG
DIUSULKAN, MAKA DENGAN INI MENYATAKAN BAHWA :**

- PENELITIAN BERJUDUL** : Revitalisasi Fungsi Sel Beta Pankreas Tikus Putih Penderita Diabetes Mellitus Buatan dengan Penggunaan Simplisia Kayu Manis (*Cinnamom burmanii*) dan Kembang Bulan (*Tithonia diversifolia*)
- PENELITI UTAMA** : Hani Plumeriastuti
- UNIT/LEMBAGA/TEMPAT PENELITIAN** : Penelitian Terapan Unggulan Perguruan Tinggi Fakultas Kedokteran Hewan Universitas Airlangga
- DINYATAKAN** : LAIK ETIK

Surabaya, 11 Juli 2019

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SRP. 2020; 11(9): 905 - 912

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Research Article

Elevated serum levels of Interleukin-13 and Interleukin-17A in Pediatric Asthma

👤 *Sawsan M. Jabbar AL-Hasnawi, Abeer Thaher Naji AL-Hasnawi.*

SRP. 2020; 11(9): 229 - 223

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Protein Isolation from Sponge Niphates sp. as an Antibacterial and Antioxidant

👤 *Warsidah, Masrianih, Mega Sari Juane Sofiana, Ikha Safitri, Ajuk Sapar, Anthoni B. Aritonang, Yuges Saputri Muttalib, Dzul Fadly.*

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Matrix Metalloproteinase-1 (MMP-1) Expression and Density of Collagen Fibers following Application of Haruan Fish (*Channa striata*) Extract in Inflamed Pulp of Wistar Rat

👤 *Juni Jekti Nugroho, Andi Sumidarti, Mufliha Siri, Muhammad Husni Cangara, Nurhayaty Natsir, Maria Tanumihardja, Noor Hikmah, Asrianti.*

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Did Servant, Digital and Green Leadership Influence Market Performance? Evidence from Indonesian Pharmaceutical Industry

👤 *Khaerul Fahmi, Temmy Kurniawan, Yoyok Cahyono, Afen Sena, Suhadarliyah, Popong Suryani, Agus Sugianto, Dahlia Amelia, Musnaini, Shofia Amin, Husni Hasbullah, M. Jihadi, Hadion Wijoyo, Agus Purwanto.*

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Juvenile Delinquency Measurement in Indonesian High Schools

👤 *Syariful, Akif Khilmiyah, Siswanto Masruri.*

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👤 *Shaqayeq Khosravi, Seyedeh Mahsa Mahmoudinezhad Dezfouli.*

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Comparative Study for Complications of Otoplasty between Patients under Ten Years and above Ten Years Old

👤 *Ahmed Miri saadoon, Ali Abd-Almer Jwad and Riyadh K. Madloun.*

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Extract Standardization in Ethyl Acetate Fraction from Sargassum Hystrix as Inhibitor of α -Amylase and α -Glucosidase

👤 *Sovia Indah Nurkhanifah, Siti Ari Budhiyanti, Amir Husni.*

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Review Article

A Review of the Presence of Antibiotic Resistance Problems on Klebsiella Pneumoniae Acquired from Pigs: Public Health Importance


👤 *Eka Dian Sofiana, Junianto Wika Adi Pratama, Mustofa Helmi Effendi, Hani Plumeriastuti, Freshindy Marissa Wibisono, Erwan Budi Hartadi, Akvyan Rafi Hidayatullah.*

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Synergistic Effect between Zingiber Officinale Volatile Oil and Meropenem against Acinetobacter Baumannii Producing-Carbapenemase Isolated from Neurosurgery in Iraq


 Safaa A.L. Al Meani, Mohammed M. Ahmed, Ali H. Abdulkareem.

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Review Article

Distinctive Therapeutic Strategies against Corona Virus-19 (COVID-19): A Pharmacological Review


 Yousra A. Nomier, Devulapalli S. Rao, Ahmed H. Suhaqi, Rayan A. Ahmed.

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Effect of Diabetic Ketoacidosis on Some Biochemical and Immunological Variables

 Oqbah Abdul Halim, Qasim Khlaif Abdullah, Asmaa wajah jumaa.

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The Effect of Benzo [A] Pyrene on Changes in the Profile of CD11B + IL1 +, CD11B + IL17 +, CD4 + CD25 + in Mice (MUS MUSCULUS, L) after Getting Paramicovirus Vaccine

 Suwoyo, Lumastari Ajeng Wijayanti, Dwi Estuning Rahayu.

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Mechanisms for Managing Medical Institutions in Times of Crisis


 Anastasia Barzylovykh, Bubala Volodymyr, Nesterenko G. Valentyna, Rogachevskiy Oleksandr, Chornyi Oleg.

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Research Article

Platelets Profile Changes in Patients with COVID 19


 Safaa jawad kadhem, Ahmed Hasan Raheem, Hassan Salim aljumaily, Ahmed Abdul Haleem Al shammari, Ameer Kadhim Al-Humairi, Ali Baay.

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Wives' Perceptions of Husbands with Erectile Dysfunction in Indonesia: The Fulfilment Pattern of the Wife's Sexual Partner Who Experiences Erectile Dysfunction due to Diabetes Mellitus


 Abd. Nasir, Susilo Hariyanto, Nuruddin, Iswatur, Supatmi, Nuh Huda.

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The Value of Standing X-ray in Detecting Physiological Spondylolisthesis in Patients with Single Disc Prolapse with Normal Intensity MRI Findings


 Najat Adel Hashim, Raad Jawad Kadhim.

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Research Article

Effect of Career, Organizational Commitment on Turnover Intention through Mediation of Organizational Culture: Evidence from Indonesian Companies


 Nico Alexander Vizano, Wiwik Utami, Sigmin Johanes, Aty Herawati, Havis Aima, Achmad H Sutawijaya, Agus Purwanto, Joko Supono, Puji Rahayu, Aris Setiyani, C Catur Widayati, Farida Elmi.

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Social Network for Drug Circulation in Sidenreng Rappang Regency, Indonesia

 Rahmat Pannyiwí, Andi Agustang, Tahir Kasnawi, Andi Tenri Pada, Ahmad Yani, Sadli Syam.

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The Mucosal Lesions on Removable Denture Wearers: A Systematic Review

 Mohammad Dharma Utama, Acing Habibie Mude, Muhammad Ikbal, Vinsensia Launardo, Adriani Dachri.

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Evaluation and Comparison of the Optimization Parameters Based on Univariate and Multivariate Techniques for Estimation Atorvastatin Calcium with Novel Reverse Indirect Spectrophotometric Method


 Marwan A. Hasan, Rebwar O. Hasan, Khalid F. Al-Rawi.

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Effect of pH, Temperature and Metal Salts in Different Storage Conditions on the Stability of Vitamin C Content of Yellow Bell Pepper Extracted in Aqueous Media

 Husni S Farah, Jehad F Alhmod, Atef Al-Othman, Khalid M Alqaisi, Ali M Atoom, Khalid Shadid, Ashok Shakya, Talal AlQaisi.

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The Influence of Organizational Culture, Job Satisfaction, and Professional Commitment on Innovative Behavior of Flight Instructors at the Civil Flight School in Indonesia


 Afen Sena, Yoyok Cahyono, Agus Purwanto.

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Potential Impact of micro RNA-146a Gene Polymorphisms in Oxidative Stress of Diabetic Mellitus Type 1


 Fulla Abd Alsatat Alriyahee, Noora M. Hameed, Israa Harjan Mohsen, Mona N. Al-Terehi.

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Testing the Role of Competence and Supervision of Job Satisfaction and Its Impact on Teacher Performance


 Danang Hidayatullah, Anis Eliyana, Hamidah, Tuty Sariwulan, Agung Dharmawan Buchdadi.

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Effectiveness of Finger Held Relaxation on the Decrease in Intensity of Pain in Patient of Post-Sectio Caesarea in RSUD Sorong Regency


 Ariani Pongoh, Adriana Egam, Rizqi Kamalah, Anwar Mallongi.

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Locator or Ball Attachment Systems for Mandibular Implant Overdentures: A Systematic Review

 Muhammad Ikbal, Acing Habibie Mude, Irfan Dammar, Vinsensia Launardo, Ian Afifah Sudarman.

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Atomic Spectroscopy Technique Employed to Detect the Heavy Metals from Iraqi Waterbodies Using Natural Bio-Filter (Eichhornia crassipes): Thera Dejala as a Case Study


 Ghalib Adrees Atiya Ali, Mohammed Nsaif Abbas.

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The Effect of Substitution of Purple Sweet Potato Flour and Tempeh on Organoleptic Quality of MP-ASI Biscuit

 Radeny Ramdany, Yulia Rachmawati, La Supu, Anwar Mallongi.

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The Effect of Transformational Leadership on Employee Job Satisfaction with the Meditation of Trust to Supervisors

 Bambang Raditya Purnomo, Anis Eliyana, Windra Alfatah Surya.

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Study the IL6 (C174G) Promoter SNP and Correlation with Physiological Growth Hormone and TNFA levels in Iraqi Subjects with Psoriasis


 Shaimaa H. Ali, Rawaa S. A. AL-Azawi, Hamzah H. Kzar.

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Effect of Organizational Citizenship Behavior, Work Satisfaction and Organizational Commitment toward Indonesian School Performance


 Budi Sulistiyo Nugroho, Minnah El Widdah, Lukman Hakim, Muh. Nashirudin, Acep Nurlaeli, Joko Hadi Purnomo, Muhammad Aziz, Hendri Hermawan Adinugraha, Mila Sartika, Muhammad Khoirul Fikri, Abdul Mufid, Agus Purwanto, Mochammad Fahlevi.

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Democratic, Autocratic, Bureaucratic and Charismatic Leadership Style: Which Influence School Teachers Performance in Education 4.0 Era?

 Wahidin, Basri, Teguh Setiawan Wibowo, Aufa Abdillah, Ahmad Kharis, Jaenudin, Agus Purwanto, Abdul Mufid, Suesthi Maharani, Alfi Qonita Badi`ati, Mochammad Fahlevi, Susila Sumartiningsih.

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Effect of Knowledge Sharing dan Leader member Exchange (LMX) and Organizational Citizenship Behavior (OCB) to Indonesian Lecturers' Performance

✎ Budi Sulistiyo Nugroho, Suheri, Lukman Hakim, Bambang Irawan, M. Sugeng Sholehuddin, Tatang Ibrahim, Mujib Ridlwan, Laily Hidayati, Gunawan Aji, Abdul Mufid, Nur Ihsan, Agus Purwanto, Mochammad Fahlevi.

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Prosthetic Rehabilitation of Patient with Ocular Defects using Conventional Technique: A Systematic Review

✎ Vinsensia Launardo, Rifaat Nurrahma, Rezki Wahyuni Syamsuddin, Acing Habibie Mude, Bashiera Ika Sari.

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A Review of Enterotoxigenic Escherichia coli Infection in Piglets: Public Health Importance

✎ Erwan Budi Hartadi, Mustofa Helmi Effendi, Hani Plumeriastuti, Eka Dian Sofiana, Freshindy Marissa Wibisono, Akvyan Rafi Hidayatullah.

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Effect of Compensation and Organization Commitment on Turnover Intention with Work Satisfaction as Intervening Variable in Indonesian Industries

✎ Nico Alexander Vizano, Wiwik Utami, Sigmin Johannes, Aty Herawati, Havis Aima, Achmad H Sutawijaya, Agus Purwanto, Joko Supono, Puji Rahayu, Aris Setiyani, C Catur Widayati.

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The Effect of Compensation Strategy Implementation on Knowledge Sharing through Affective Commitment and Psychological Contracts

✎ Afzil Ramadian, Anis Eliyana, Hamidah, Agung Dharmawan Buchdadi, Randa Rakawuri.

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Periodontal Status of Drug Abuser in Makassar

✎ Nursyamsi Djamaluddin, Bagus Setiawan.

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New Paradigm for the Life Skills Development of Children and Youth in Elementary Education Schools in the Rural Highland of Omkoi District, Chiang Mai, Thailand: Towards Achieving the Sustainable Development Goals (SDGs)

✎ Priyanut Wutti Chupradit, Pariwit Vitayacheeva, Rattaphol Prommas, Mujalin Prasannarong, Savitree Thummasorn, Sopida Apichai, Waranya Chingchit, Pachpilai Chaiwong, Chalanda Janton, Apiwat Leewattana, Natthanit Joompathong, Jedbordin Kumkronglek, Chanakarn Kumkun, Utumma Maghanemi, Kwanchai Rattanasthien, Natnakorn Kumfang, Thirasak Uppamaithichai, Supat Chupradit.

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Moderating Role of IT Adoption and Mechanism of Dynamic Capabilities on Indonesian Pharmaceutical Firms Performance

✎ Juhriyansyah Dalle, Sandu Siyoto, Nita Dwi Astika, Danes Jaya Negara, Teddy Chandra, Khairul Anam.

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The Prevalence of Temporomandibular Joint Disorders in Young Violin Players in Two Orchestras in Indonesia

✎ Ike Damayanti Habar, Andi Adytha M.I.R, Mohammad Dharma Utama, Bahruddin Thalib, Acing Habibie Mude, Muhammad Ikbal, Eri Hendra Jubhari.

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mHealth Interventions for Cancer Care and Support A Systematic Literature Review

✎ Samar Zuhair Alshawwa, Rasha Assad Assiri.

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Impact of Complications after Surgical Treatment of Colon Cancer on Survival

 *Bekisheva Aizhan, Makishev Abai, Yoshihiro Noso.*

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Quality of Dental Health Service in Indonesia: A Pilot Pathfinder Survey


 *Fuad Husain Akbar, Selistiani, Abd Hair Awang.*

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Did Transformational, Transactional Leadership Style and Organizational Learning Influence Innovation Capabilities of School Teachers during Covid-19 Pandemic?

 *Oding Supriadi, Zulkifli Musthan, Sa'odah, Rizki Nurjehan, Yuyun Dwi Haryanti, M. Rafid Marwal, Agus Purwanto, Abdul Mufid, Rohmad Adi Yulianto, Moh Farhan, Ahmad Asrof Fitri, Mochammad Fahlevi, Susila Sumartiningsih.*

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The Role of Folic Acid on Some Physiological Parameters and Efficiency of Sperm in Male Rabbits

 *Rashad Fadhil Ghadhban, Nawras A. Alwan.*

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Tourism and Original Local Government Revenue in Indonesia Tourism Provinces: The Java Island Experience


 *Yustisia Kristiana, Rudy Pramono, Theodosia C. Nathalia, Vasco Adato H. Goeltom.*

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Research Article

Cytotoxicity Test of Tithonia diversifolia Leaf Extract on Bone Marrow Mesenchymal Stem Cell (BMSC) of Rats Using MTT Assay Method


 *Hani Plumeriastuti, Agesti Yeva Kalista, Budiastuti, Mustofa Helmi Effendi.*

SRP. 2020; 11(9): 1008 - 1013

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Boosting Organizational Commitment Through Visionary Leadership and Work Life Balance


 *Heni Kesumayani, Anis Eliyana, Hamidah, Maruf Akbar, Karuniana Dianta Sebayang.*

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IN-VITRO EVALUATION OF THE ANTICANCER ACTIVITY OF Cu(II)AMINA(CYSTEINE)DITHIOCARBAMATE

 *Desy Kartina, Abdul Wahid Wahab, Ahyar Ahmad, Rizal Irfandi, Prihantono, And Indah Raya.*

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THE ROLE OF FAMILIES CARING FOR PEOPLE WITH MENTAL DISORDERS THROUGH FAMILY RESILIENCE AT EAST JAVA, INDONESIA: STRUCTURAL EQUATION MODELING ANALYSIS

 *Ah Yusuf, Sitti Sulaihah, Hanik Endang Nihayati, M. Suhran, Hari Basuki N, Mundakir, Esti Yunitasari.*

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Participation in-Service Teacher Training- Creativity Cultivation Program

 *Chen, I-Ju, Lin, Yi-Kai, Wey, Tzong-Ming, Chang, Yu-Heng, Hung, Ming-Kuo.*

SRP. 2020; 11(9): 1014 - 1018

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Observational Learning and Word of Mouth Against Consumer Online Purchase Decision during the Pandemic COVID-19

 *Juliana, Rudy Pramono, Arifin Djakasaputra, Innocentius Bernarto.*

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The Role of Organizational Justice Dimensions: Enhancing Work Engagement and Employee Performance

 *Marisi Pakpahan, Anis Eliyana, Hamidah, Agung Dharmawan Buchdadi, Titis Ratih Bayuwati.*

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HOW DOES APOPTOSIS OF OOCYTES AND GRANULOSA CELLS DUE TO CIGARETTE SMOKE EXPOSURE TO MICE BALB/C ? : EXPRESSION SMAD3, GDF9, APOPTOSIS

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Review Article

Construction and Preliminary Validation of the COVID-19 Pandemic Anxiety Scale

V Vineeth Kumar, Geetika Tankha, Shelly, Sylvi Seth, Apeksha, Tanya S. Timple.

SRP. 2020; 11(9): 1019 - 1024

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.147

Research Article

ENHANCING EMPLOYEE PERFORMANCE WITH WORK MOTIVATION AS A MEDIATION VARIABLE

Qori Al Banin, Anis Eliyana, Eva Risalatul Latiffiyah.

SRP. 2020; 11(9): 333 - 346

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.50

Research Article

Identification of The Positive and Negative Emotions that Appeared among High School Students When Selecting University at Jakarta and Surrounding Area

Hendra Achmadi, Ferdi Antonio, Rudy Pramono, Innocentius Bernarto, Agus Purwanto

SRP. 2020; 11(9): 759 - 766

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.107

Research Article

An Empirical Examination of the Effect of TQM Practices on Hospital Service Quality: An Assessment Study in UAE Hospitals

Ahmad Aburayya, Muhammad Alshurideh, Amina Al Marzouqi, Osama Al Diabat, Alanood Alfarsi, Roberto Suson, Mohammad Bash and Said A. Salloum.

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.51

Review Article

The Impact of Motivation Mediation and Its Effect on the Level of Education and Work Facilities on Employee Performance (Case Study of Education Office, West Sumatera Province)

Agussalim M, Novi Yanti, Hisar Sirait.

SRP. 2020; 11(9): 1025 - 1034

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.148

Review Article

A Review of the Opportunistic Pathogen *Citrobacter Freundii* in Piglets Post Weaning : Public Health Importance

Akvyvan Rafi Hidayatullah, Mustofa Helmi Effendi, Hani Plumeriastuti, Freshindy Marissa Wibisono, Erwan Budi Hartadi, Eka Dian Sofiana.

SRP. 2020; 11(9): 767 - 773

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.108

Review Article

DISPARITIES OF THE USE OF HORMONAL AND NON-HORMONAL CONTRACEPTIVE DRUGS IN URBAN AND RURAL AREAS IN INDONESIA AND THE WORLD

Agustina Abuk Seran, Myrtati Dyah Antaria, Setya Haksama, Ema Setjaningrum, Agung Dwi Laksono, Anita Dewi Prahastuti Sujoso.

SRP. 2020; 11(9): 66 - 73

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.12

Research Article

Antidiabetic Activity of Papaya Leaf Extract (*Carica Papaya L.*) Isolated with Maceration Method in Alloxan-Induces Diabetic Mice

Tridiganita Intan Solikhah, Boedi Setiawan, Dilian Ramdana Ismukada.

SRP. 2020; 11(9): 774 - 778

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.109

Review Article

Health Care Professional Attitude and Motivation During COVID-19: A Case of Health Sector of Oman

Ismail AlAbri, Rusinah bte Siron.

SRP. 2020; 11(9): 1035 - 1040

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.149

Research Article

Develop Leadership Style Model for Indonesian Teachers Performance in Educative 4.0 Era

Anissa Lestari Kadiyono, Rezki Ashriyana Sulistiobudi, Ikhfan Haris, Mohd Kha'idir Abdul Wahab, Idan Ramdani, Agus Purwanto, Abdul Mufid, Muhammad Rikza Muqtada, M. Gufron, Mohamad Nuryansah, Lina Aris Ficayuma, Mochammad Fahlevi, Susila Sumartiningih.

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.52

Review Article

EMPOWERMENT OF JUNIOR HIGH SCHOOL STUDENTS IN PREVENTION EARLY-AGE MARRIAGE IN GUNUNG KIDUL DISTRICT

Masruroh Masruroh, Soetrisno Soetrisno, Mahendra Wijaya, Sapja Anantanyu.

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.13

Research Article

The Impact of Social Capital, Entrepreneurial Competence on Business Performance: An Empirical Study of SMEs


Ahmad Yani, Anis Eliyana, Hamidah, I Ketut R. Sudiarditha, Agung Dharmawan Buchdadi.

SRP. 2020; 11(9): 779 - 787

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.110

Review Article

The Impact of Mass Media and Food Consumption


 *Abubakar Iskandar, R. Oetje Subagdja, Maria Fitriah, Sukarelawati.*

SRP. 2020; 11(9): 1041 - 1054

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.150

Review Article

More Meat, More COVID-19 Cases? Comparative Study between USA and China in Importing Mutton


 *Maslichah Mafruchati.*

SRP. 2020; 11(9): 374 - 377

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.53

Research Article

CYP24A1 and AHR Gene Expression in Iraqi Colorectal Cancer Patients


 *Wathiq Abbas Aldrghi, Alaa Makki Jabbar Shafeea, Nawal Mehdi Alkhalidi.*

SRP. 2020; 11(9): 89 - 94

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.15

Research Article

The Effect of Transformational Leadership on Employee Creative Self Efficacy with Creative Role Identity as a Mediation Variables


 *Barika, Anis Eliyana, Hamidah, Agung Dharmawan Buchdadi, Rengga Zulfiansyah Lakspakarti.*

SRP. 2020; 11(9): 788 - 797

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.111

Research Article

Cytotoxic Effect of Essential Oil from Cinnamon (*Cinnamomum burmannii*) Bark on Rat Bone Marrow Mesenchymal Stem Cells: In Vitro Study


 *Budjastuti, Niken Dwi Lestari, Mustofa Helmi Effendi, Arimbi, and Hani Plumeriastuti.*

SRP. 2020; 11(9): 378 - 383

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.54

Review Article

Privacy Preserving Data Publishing for Heterogeneous Multiple Sensitive Attributes with Personalized Privacy and Enhanced Utility

 *Jayapradha. J, Prakash. M, Yenumula Harshavardhan Reddy.*

SRP. 2020; 11(9): 1055 - 1066

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.151

Research Article

Management's Initial Thought in the Industrial Era 4.0 and Millennialization, Is It Still Relevant?


 *Rosa Rilantiana, Anis Eliyana, Djoko Suprayetno, Kresno Eka Mukti.*

SRP. 2020; 11(9): 798 - 802

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.112

Research Article

Study the Effect of Gabapentin on the Histology of Some Organs of Male rats


 *Fakhir M. ALzubaidy, Aymen A Bash, Raad Jasim.*

SRP. 2020; 11(9): 95 - 101

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.16

Research Article

Bioactivity of Amomum Compactum Soland Ex Maton (Java Cardamom) as a Natural Antibacterial


 *Tyagita Hartady, Roostita Lobo Balia, Mas Rizky Anggun Adipurna Syamsunarno, Sabri Jasni, Bambang Pontjo Priosoeryanto.*

SRP. 2020; 11(9): 384 - 387

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.55

Review Article

Improving White Box Testing Using Bi ? Directional Symbolic Analysis and Test Case Slicing


 *P. Velmurugan, S. Ganesh Kumar*

SRP. 2020; 11(9): 1067 - 1071

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.152

Research Article

Effect of Protecting Proteins from Degradation in the Rumen on Single Volatile Fatty Acid of Al Awassi Lambs


 *Dr. Ibrahim S. Jasim.*

SRP. 2020; 11(9): 388 - 397

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.56

Research Article

Improving Kernel Weight and Number in Some Maize Subspecies Crosses


 *M.M. Elsahookie, Saddam H. Cheyed A.A. Dawood.*

SRP. 2020; 11(9): 803 - 807

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.113

Review Article

Bilingual Education Learning to Engage in Academic Activities

 *Chen, I-Ju, Chang, Yu-Heng, Wey, Tzong-Ming.*

SRP. 2020; 11(9): 1072 - 1076

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.153

Review Article

Post-operative Obturator after Maxillectomy: A Systematic Review


 *Irfan Dammar, Acing Habibie Mude, Muhammad Ikbah, Yusalvi Rivai*

SRP. 2020; 11(9): 1 - 5

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.1

Research Article

Epidemiological Study of Giardia lamblia in Tikrit city, Iraq


 *Turkan Ahmad Hama Hasan, Abdul Khaleq Alwan Muhaimid, Ayhan Rashid Mahmoud.*

SRP. 2020; 11(9): 102 - 106

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.17

Review Article

Beef, Pork, or Lamb? Comparative Study Between 3 Kinds of Red Meat Consumption in the USA toward the Number of COVID Cases


 *Maslichah Mafruchati.*

SRP. 2020; 11(9): 808 - 812

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.114

Short Communication

ANALYTIC STUDY OF ENDODONTIC WORKING LENGTH VARIATION OF MAXILLARY CANINE IN BASRAH GOVERNORATE


 *Zainab Abdulkareem Maktoof, Zahraa Mazin Al-Hawwaz, Hiyam Salah Ahmed.*

SRP. 2020; 11(9): 107 - 109

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.18

Research Article

Effect of Protecting Proteins from Degradation in the Rumen on Rumen Fermentations of Al Awassi Lambs

 *Dr. Ibrahim S. Jasim.*

SRP. 2020; 11(9): 398 - 408

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.57

Review Article

nCD64, mHLA-DR: Sensitive Diagnostic Markers of Infection in Term Infants Receiving Antibiotic Treatment


 *Nguyen Thi Ngoc Tu, Le Thanh Hai, Truong Thi Mai Hong, Pham Thu Hien, Le Thi Ha, Doan Thi Mai Thanh.*

SRP. 2020; 11(9): 1077 - 1081

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.154

Research Article

Overview of Metabiotics and Probiotic Cultures During Fermentation of Molasses

 *V.S. Popov, N.V. Vorobyeva, G.A. Svazlyan, N.M. Naumov, O.A. Gryaznova.*

SRP. 2020; 11(9): 813 - 817

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.115

Research Article

The Protective Effect of Omega3 Against Amikacin- Induced Nephrotoxicity in Rats


 *Afrah Thiab Hlail, Hadeel Rashid Faraj, Wafa S. Abdulredha.*

SRP. 2020; 11(9): 110 - 117

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.19

Research Article

Dynamics of Immune Status in Myofibrillar Myopathy with the T341P DES Mutation


 *Viacheslav Yurievich Pauls.*

SRP. 2020; 11(9): 818 - 824

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.116

Research Article

Develop Model of Transactional, Transformational, Democratic and Autocratic Leadership Style for Indonesian School Performance in Education 4.0 Era


 *Irjus Indrawan, Evanirosa, Ramsah Ali, Indra, Ramadan, Muh. Hanif, Ihsan Harun, Lathifah Hanum, Agus Purwanto, Abdul Mufid, Siti Nurkayati, Mochammad Fahlevi, Susila Sumartiningsih.*

SRP. 2020; 11(9): 409 - 419

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.58

Research Article

The Validity of CXR in the Screening & Detection of Endobronchial Lung Cancer in Iraqi Patients


 *Ameer Kadhim Al-Humairi, Safaa jawad Kadhem, Ahmed Hussein jasim, Shahad hamid mekki, Zainab Alaa abd-alhussein, Ali Baay.*

SRP. 2020; 11(9): 578 - 583

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.84

Review Article

Clinical study of Oral Lichen Planus for a selective sample in Basrah City south of Iraq between 2017-2019


 *Ghaydaa Hashim Al Qudsi, Hussein Sh. Al-Essa and Sundus Abdul Wadood Aljazeera.*

SRP. 2020; 11(9): 1082 - 1090

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.155

Research Article

Treating Groundwater Salinity using Magnetic Field Technology


 *Yassien H. Owaied AL-Juboory, Aseel H. Mahdi.*

SRP. 2020; 11(9): 118 - 123

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.20

Research Article

The Effect Of Virtual Nutrition Education for The Improvement of Mother's Knowledge About Complementary Feeding: Randomized Control Trial

 *Nadimin, Aswita Amir, Sitti Rahmah, Sirajuddin.*

SRP. 2020; 11(9): 825 - 829

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.117

Research Article

Synthesis of Heterocyclic Nitrogen Compounds using Cyclohexene Derivative with Various Primary Amines

 *Hamid J. Mohammad, Israa I. Salih, Rabeah T. Mahmood.*

SRP. 2020; 11(9): 124 - 129

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.21

Research Article

The Oxidative Stress Induced by the Vapours of Electronic- Hookah on Mice Liver Tissues

 *Rasha Shaker Nima, Dhifaf Zeki Aziz.*

SRP. 2020; 11(9): 420 - 423

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.59

Review Article

The Intervention of the Pirfenidone with Pericyst Layer Building of the Hydatid?? Cyst


 *Yousif Tawfeeq, Ahmed A. Mohammed, Yassir Mustafa Kamal.*

SRP. 2020; 11(9): 1091 - 1099

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.156

Research Article

In Vitro Antiviral Activity of Morin Compound against Dengue Virus Type 1 in Vero Cells

 *Anisa Maharani, Teguh H. Sucipto, Harsasi Setyawati, Yovilianda M. Untoro, Novia F. Sholihah, Siti Churrotin, Ilham H. Amarullah, Puspa Wardhani, Aryati, Soegeng Soegijanto.*

SRP. 2020; 11(9): 830 - 833

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.118

Research Article

Effect of Stick Sweet Cherry (*Prunus aviam*) on the Reproductive System of Male Mice


 *Wasnaa H. Mohammed, Hamssa E. Abdul-Wahed, Zahraa A. Sharba.*

SRP. 2020; 11(9): 130 - 134

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.22

Research Article

Relative Indicators and Predicative Ability of Some Biological Variables on Cardiac Neural Activity for Volleyball Players


 *Mohammed Nader Shalaby, Marwa Ahmed Fadl.*

SRP. 2020; 11(9): 834 - 840

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.119

Review Article

Investigate the Strategy of Using Pharmacogenetics and Pharmacometabonomics to the Personalization of Ticagrelor Antiplatelet Therapy


 *Mohammed Ahmed Akkaif, Abubakar Sha'aban, Nur Aizati Athirah Daud, Mei Li Ng, Baharudin Ibrahim.*

SRP. 2020; 11(9): 1100 - 1107

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.157

Research Article

EEG Changes in Patients with Functional Psychosis in Babylon Province


 *Huda Abd Ali Hussien, Waleed Azeez AL-Ameedy, Farah Nabil Abass.*

SRP. 2020; 11(9): 135 - 139

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.23

Research Article

Comparison of Macro Nutritional Value, Dissolved Protein, Amino Acids and Minerals of Fresh and Crispy-Product of Anchovy (*Stolephorus Commersonii*)


 *Fronthea Swastawati, Putut Har Riyadi, Hersanti Sulistyningrum, Sepsina Resky, Slamet Suharto.*

SRP. 2020; 11(9): 424 - 430

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.60

Research Article

Defensive Effects of Breberine against Cypermethrin Induced Male Reproductive System Toxicity in Rabbits


 *Hawraa M. Murad, Shurooq Asaad Abdulameer, Dhuha Salman Asker Aljuboory, Dheyaa A. Neamah, Ali Hamza Maktouf.*

SRP. 2020; 11(9): 841 - 846

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.120

Research Article

The Concept of Illness among Ethnic Groups in Indonesia: A Meta-Ethnographic Study

 *Agung Dwi Laksono, Ratna Dwi Wulandari, Zainul Khaqiqi Nantabah, Zulfa Auliyati Agustina, Ira Ummu Aimanah, Rukmini Rukmini, Yunita Fitrianti, Yurika Fauzia Wardhani, Diyan Effendi, Suharmiati Suharmiati, Lestari Handayani, Niniek Lely Pratiwi*

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Research Article

Effects of Cinnamon and Their Beneficial Content on Treatment of Oxidative Stress

Oras Khalis yaseen, Mustafa Taha Mohammed.

SRP. 2020; 11(9): 847 - 850

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.121

Research Article

Incidence of Mumps in Hilla City

Harith Fathi AL-Asady, Lateef Hussien AL-Khafaji, Safaa Sahib Naji.

SRP. 2020; 11(9): 140 - 142

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.24

Research Article

Vitamin D3 for Health and Muscle Functions of Athletes

Mohammed Nader Shalaby, Mona Mostafa Abdo Sakoury, Salman Mohammed Harthi, Faleh Mohammed Alshalawi, Marwa Mohammed Alhajji, Zahraa Hassan Alshaikh, Alhanouf Hassan Aljaber.

SRP. 2020; 11(9): 851 - 854

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.122

Research Article

Exploration of the Relationship Between Interleukin 37 and Folic Acid in Type 2 Diabetic Patients

Anwar A. Hussain, Khalid F. Al-Rawi, Aseel Khalid Hameed.

SRP. 2020; 11(9): 143 - 148

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.25

Research Article

The Correlation of Google Trends as an Alternative Information Source in the Early Stages of COVID-19 Outbreak in Indonesia

Elly Usman, Ricvan Dana Nindrea.

SRP. 2020; 11(9): 431 - 438

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.61

Review Article

The Study of Genetic Variations of Human Testis-Expressed Protein 101 (TEX 101) and Hormonal Levels of Fertile and Infertile (Oligospermia) Men

Baraa Ahmed Saeed, Rayah S. Baban, Usama Al-Nasiri.

SRP. 2020; 11(9): 1108 - 1117

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.158

Research Article

The Relationship between Vitamin D Deficiency and Interleukins 8 and 10 in Diabetes Mellitus

Sura Mustafa Qasim, Alaa Zenzal Ra'ad Al-dorri, Mohanad Hasan Mahmood Al-Izzi.

SRP. 2020; 11(9): 149 - 155

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.26

Research Article

Enhancing Antimicrobial Properties of Food Packaging Sheets by Incorporating ZnO- Nanoparticles (NPs)

Ali R. Mulakhudair and Zahraa Reasan Kareem Shati.

SRP. 2020; 11(9): 592 - 596

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.86

Research Article

Do Servant Leadership Influence Market Performance? Evidence from Indonesian Pharmacy Industries

Yoyok Cahyono, M. Jihadi, Zainal Arifin, Wulan Purnamasari, Musnaini, Hadion Wijoyo, Fitriaty, Riyan Sisiawan Putra, Rizki Amalia Putri, Dadah Muliandyah, Popong Suryani, Agus Purwanto.

SRP. 2020; 11(9): 439 - 451

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.62

Review Article

Effect of Xanthium Strumarium Extract on Some Virulence Factor of Proteus Mirabilis Isolated from Patients in Ramadi Hospital

Ali Abd Sharad, Omar Almuharib, Najeab Mohammed Hussein.

SRP. 2020; 11(9): 1122 - 1124

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.160

Research Article

Assessment of Some Biomarkers Related with Recurrent Miscarriages in Iraq

Yahaya M. Jabber, Alaa Jawad Hassan, Hussein N. Abdullah.

SRP. 2020; 11(9): 156 - 162

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.27

Research Article

Penicillin for Secondary Prevention of Acute Rheumatic Fever and Rheumatic Heart Disease in Acehese Children

HERLINA DIMIATI, SOFIA SOFIA, BASRI A. GANI.

SRP. 2020; 11(9): 452 - 457

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.63

Review Article

The Effect of Microbiology Fertilization on the Nitrogen Fixation of Wheat Plant

Fawz A. Al.Saffar, Alaa Hussein Ali Al-Shalal

SRP. 2020; 11(9): 1125 - 1129

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.161

Research Article

Distance Education as an Alternative Form of Learning During a Pandemic

Natalia Kaliuzhka, Nelia Samoilenko, Larysa Zdanevych, Olesia Kyselova, Natalia Terentjeva, Diana Koval.

SRP. 2020; 11(9): 458 - 461

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.64

Research Article

Correlation between P53 and Ki67 with Aggressiveness Factor in Recurrent Respiratory Papillomatosis


Rizka Fathoni Perdana, Sri Herawati, Muhtarum Yusuf, Irwan Kristyono, Pugh Setya Nugroho.

SRP. 2020; 11(9): 163 - 168

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.28

Review Article

Assessment the Correlation of D-dimer and Ferritin Level in Patients Infected with Covid-19 in Anbar Governorate of Iraq


 Safaa A.L. Al Meani, Ali H. Abdulkareem, Mohammed O. Ibrahim, Mohammed M. Ahmed, Mahmood Yassin Mukhlif.

SRP. 2020; 11(9): 1130 - 1133

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.162

Research Article

Coronavirus: Disrupts the Health of Social Networking Sites (SNS)


 Dahyar Daraba, Ruliando Hasea Purba, Muhammad Faisal, Selfi Ami Susanti.

SRP. 2020; 11(9): 855 - 859

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.123

Research Article

Intervention Model for Barotrauma Diseases to Improve Health and Safety Diving Behaviors in Traditional Fishermen in Small Islands in Makassar, Indonesia


 Syamsiar S. Russeng, Lalu Muhammad Saleh, Awaluddin, M. Rum Rahim, Anwar Mallongi.

SRP. 2020; 11(9): 597 - 600

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.87

Research Article

Information and Innovative Technologies in Distance Learning in Higher Education Institutions of Ukraine


 Inna Ivzhenko, Iryna Sokol, Valentyna Kochyna, Margaryta Noskova, Liliia Yeromina, Valentyna Blokhina.

SRP. 2020; 11(9): 462 - 465

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.65

Review Article

Effect of COVID-19 Virus on Biomass Index of Infected Patients

 Safaa A.L. Al Meani, Mohammed M. Ahmed, Ali H. Abdulkareem, Nihad M. Hamid, Mohammed O. Ibrahim.

SRP. 2020; 11(9): 1134 - 1136

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.163

Research Article

Effect of Adsorbent Composition Variation Quartz Sand/Andisol Soil/Zeolite/Activated Carbon Toward Cu, Pb, Coliform Total and E. coli Treatments on the Citarum River


 Muhammad Sholeh, Pranoto, Sri Budiastuti, Sutarno.

SRP. 2020; 11(9): 169 - 177

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.29

Review Article

Pre-Exposure Prophylaxis for COVID-19 Infection: Current Concepts and Strategies


 Asmaa T Uthman, Noor N Al-Rawi, Natheer Al-Rawi.

SRP. 2020; 11(9): 860 - 865

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.124

Research Article

The Effect of Treating Barley Straw with Fungus (Trichoderma Harzianum) (1): on Growth and Some Carcasses Characteristics of Awassi Lambs

 S.N. Alwaeli, W.H. Al-Samarraee, M.J.H. Al-Tamemmy and Y.M. Al-Saadi.

SRP. 2020; 11(9): 601 - 605

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.88

Review Article

Investigation of the Trichomonas Hominis and Some other Parasites in Cases of Diarrhea Accompanying Children Arriving to the Obstetrics and Gynecology Hospital in Ramadi / Iraq


 Abdulkhalik Alwan Mohemeed, Thaer Abdulqader salih, Qutaiba Ali Saleh Khalaf AL- juboori.

SRP. 2020; 11(9): 1137 - 1142

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.164

Research Article

Six Sigma Benefit for Indonesian Pharmaceutical Industries Performance: A Quantitative Methods Approach


 Hayu Kartika, Defi Norita, Novera Elisa Triana, Iwan Roswandi, Abdul Rahim, Aulia Naro, Titia Izzati, Andary Asvarozza Munita, Didi Junaedi, Wiwit Suprihatiningsih, Agus Purwanto, Candra Setia Bakti.

SRP. 2020; 11(9): 466 - 473

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.66

Review Article

A Novel Pleiotropic Effect of Beta-Blockers: Useful or Not?


 Tara Mandiricha, Maftuchah Rochmanti.

SRP. 2020; 11(9): 178 - 186

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.30

Research Article

Beta-Oxybutyrates: Biological and Pharmacological Effects


 Bokov D.O., Morozova M.A., Beniashvili A.G., Bessonov V.V.

SRP. 2020; 11(9): 866 - 871

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.125

Research Article

Behavior of Growth and Yield Bread Wheat by the Influence of Fulvic Acid and Seeding Rate


 Hanaa Khudhaier Mohammed Ali Al-Haidary and Safaa A. Al-Zubaidy.

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Review Article

[Studies on microRNA in Pediatric Tuberculosis](#)


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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.165

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[PSMA-Specific Peptide with Inhibitor Cystine Knot for Prostate Cancer Treatment](#)

 *Elena Iurova, Ivan Beloblov, Evgenii Beloborodov, Eugenia Rastorgueva, Eugenia Pogodina, Elizaveta Tazintseva, Aleksandr Fomin.*

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[Research Activity as a Technology of Activation of Cognitive Activity of Students of Higher Education Institutions](#)


 *Tetiana Aliexsieienko, Yuliia Pivnenko, Hanna Apalat, Lesia Vysochan, Viktoriia Mohilevska, Iryna Androshchuk.*

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[Study the Impact of Some Factors Associated with Hookah Smoking on Blood Standards](#)


 *Amjad Adham Ahmed, Atheer Shehab Ahmed and Sara Fawzi Sahn.*

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[Molecular analysis of virulence genes of UTI causing bacteria among pregnant women in Baghdad city, Iraq](#)

 *Elaf Sameer and Rawa Abdul Redha Aziz.*

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[Does the Place of Residence Affect the Achievement of Exclusive Breastfeeding? A Study in Eastern Indonesia](#)

 *Ratna Dwi Wulandari, Agung Dwi Laksono.*

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[Effect of Pedagogic, Professional Competency, and Work Motivation Toward Indonesian Primary School Teachers Performance](#)


 *Jihaduddin, Nenden Suciwati Sartika, Desty Endrawati Subroto, Ratu Mauladaniyati, Eka Rosdianwinata, Rusdian Rifa'i, Asep Sujana, Zaenal Abidin, Muhamad Dadi Priadi, Eka Setiawati, Desri Yanti, Agus Purwanto.*

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[Factors Related to the Choice of Contraceptive Methods among the Poor in Indonesia](#)

 *Agung Dwi Laksono, Ratu Matahari, Ratna Dwi Wulandari.*

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[Interactive Training Tools in the Modern Educational Process](#)

 *Natalia Malinowska, Valentyna Borova, Valentuna Benera, Vadym Shemchuk, Iryna Gogol, Ihor Androshchuk.*

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[The Role Of Women In Maintaining The Environment Through Vegetable Development In Rural Agriculture Systems](#)

 *Evi Feronika Elbaar, Batrixia Barbara, M. Arief Fathuddien Hamdie, Yayuk Puji Lestari.*

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[Genotype of Potassium Inwardly Rectifying Channel, Subfamily J, Member 11 \(KCNJ 11\) Gene and Glycaemia Control in Diabetic Patients: A Narrative Review](#)

 *Dyah Aryani Perwitasari, Imaniar Noor Faridah, Haafizah Dania, Lalu Muhammad Irham, Fathia Vikri Salsabila, Rita Maliza.*

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[The Impact of Diabetes Mellitus on the Association of Endothelial Nitric Oxide Synthase Gene Polymorphisms \(4a/4b, G894T, and T786C\) with Clopidogrel Resistance in Coronary Artery Disease Patients Undergoing Percutaneous Coronary Interventions](#)

 *Ali A. R. Aldallal, Bassim I Mohammad, Ahmed N. Rgeeb, Salam Jasim mohammed, Khalid Amber.*

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[A Review of Salmonellosis on Poultry Farms: Public Health Importance](#)

 *Freshindy Marissa Wibisono, Freshinta Jellia Wibisono, Mustofa Helmi Effendi, Hani Plumeriastuti, Akvyan Rafi Hidayatullah, Erwan Budi Hartadi, Eka Dian Sofiana.*

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[Adverse Effects of Green Tea on Public Health the Untold whole Medical Story](#)


 *Ameera Kamal Khaleel, Ramizu Bin Shaari, Mohamad Arif Awang Nawi, Ali Mihsen Hussein Al-yassiri.*

SRP. 2020; 11(9): 883 - 887

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Review Article

[A Review of Bacterial Zoonoses and Antimicrobial Resistant \(AMR\) on Grouper fish \(Epinephelus sp.\)](#)


 *Azhar Muhammad Helmi, Akhmad Taufiq Mukti, Agoes Soegianto, Ketut Mahardika, Indah Mastuti, Mustofa Helmi Effendi and Hani Plumeriastuti.*

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.14

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[The Level of Student`s Creative Thinking Through Solving Open Ended Mathematics from Learning Style](#)


 *Dr. Ardianik, M.Kes., M.Pd, Dr. Edy Widayat, Drs., M.Si, Nailul Izzah, S.Pd., M. Kes, Dr. Kusmiyati, Dra., M. Pd.*

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[Modern Halogen-Containing Anesthetics in Anesthetic Management of Thoracic Surgical Interventions](#)


 *Dmitry G. Kabakov, Margarita A. Vyzhigina, Dmitry V. Bazarov, Svetlana G. Zhukova, Alexey A. Kavochkin, Kulagina T.Yu.*

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[Effect of Phosphorus Interferon on Some Physiological and Growth of Barley \(Hordeum Vulgare L.\)](#)


 *Warqa a Muhammed Shariff Al-Sheikh.*

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[Evaluation of the Combination of Sargassum Duplicatum, Sargassum Illicifolium, Abelmoschus Esculentus, and Garcinia Mangostana Extracts for Open Wound Healing in Diabetic Mice](#)


 *Saikhu Akhmad Husen, Muhammad Farraz Syadzha, Muhamad Frendy Setyawan, Pratiwi Pudjiastuti, Arif Nur Muhammad Ansori, Raden Joko Kuncoroningrat Susilo, Suhailah Hayaza, Dwi Winarni, Win Darmanto.*

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.129

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[Slow Released Fertilizer of Fe²⁺ and Mn²⁺ from Composite Micronutrient Chitosan-Silica](#)

 *Bertha Mangallo, Anwar Mallongi, Ishak Musaad, Sartji Taberima.*

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[Molecular and susceptibility Study of Antibiotic Resistance Genes in E. coli Isolated from Selected Iraqi Patients](#)

 *Wedad Salih Dawood.*

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[Performance Achievement of Nutritional Programs in Mulyorejo Public Health Center, Surabaya, Indonesia in 2018](#)


 *Shifa Fauziyah, Zukhaila Salma, Serious Miliyani Dwi Putri, Faradila Khoirun Nisa Hakim, Hamidah Retno Wardani, Budi Utomo, Adi Pranoto, Pradika Gita Baskara, Teguh Hari Sucipto.*

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[Use of Natural Peptides with a Cysteine Knot of Arthropods as a Carrier of a Peptide Tropic to Glutamate Carboxypeptidase II](#)


 *Elena Iurova, Ivan Beloblov, Evgenii Beloborodov, Eugenia Rastorgueva, Evgenia Pogodina, Elizaveta Tazintseva, Yuri Saenko, Aleksandr Fomin.*

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.73

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[Scoring System in Prediction of Stunting Risk Among Children in West Sumatera Province, Indonesia](#)


 *Masrul, Ely Usman, Amel Yanis, Ricvan Dana Nindrea.*

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.94

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[Transvaginal Ultrasound versus Saline Infusion Ultrasound for the Characterization of Intrauterine Lesions in Premenopausal Women with Abnormal Uterine Bleeding](#)

 *Rana Hatem Matrood Alkhazraji, Mohammed Habeeb Hachim and Alaq Saeed Abdulhussain.*

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[Importance and Benefit of Application of Governance Risk and Compliance Principle](#)

 *Bambang Leo Handoko, Ignatius Edward Riantono, Engelwati Gani.*

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Evaluation of the Effect of Massage by the Mother on the Pain of Term Infants after Care Measures


 *Hamidreza Khoshnezhad Ebrahimi, Soroor Sohrabi, Shabahang Jafarnejad, Saeideh Iranmanesh, Somayeh Esmaeilian.*

SRP. 2020; 11(9): 899 - 904

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.131

Research Article

Hepatoprotective Activity of Ethanolic Extract of Fresh and Fermented Clam *Meretrix meretrix* from Kalimantan, Indonesia

 *Dzul Fadly, Andi Hairil Alimuddin, Rukman Abdullah, Lili Amaliah, Rafdinal, Shifa Helena, Syarif Irwan Nurdiansyah, Warsidah.*

SRP. 2020; 11(9): 514 - 517

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.9.75

Cytotoxic Effect of Essential Oil from Cinnamon (*Cinnamomum burmannii*) Bark on Rat Bone Marrow Mesenchymal Stem Cells: In Vitro Study

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ABSTRACT

The aim of this study was to determine the cytotoxicity properties of essential oil from Cinnamon (*Cinnamomum burmannii*) bark on rat bone marrow mesenchymal stem cells (rBMSCs). This research was an experimental laboratory with The Post Test Only Group as a research design. Essential oil from Cinnamon (*Cinnamomum burmannii*) bark obtained from steam distillation method and essential oil was made in a series dilution with a concentration of 0,5%, 0,25%, 0,125%, 0,0625% and 0,0312%. Furthermore, the cytotoxicity test on rBMSCs using MTT assay. Microplate containing rBMSCs that had been exposed to five concentrations was incubated in a 5% CO₂ incubator with 37 °C for 24 hours. The result of MTT assay can be seen from the absorbent solution formazan crystal through ELISA reader with the specific wavelength of 595 nm which produces data in the form of Optical Density (OD). The result research showed that the rBMSCs cell life percentage in 0,5%, 0,25%, 0,125%, 0,0625% and 0,0312% of concentration respectively were 12,8%, 18,3%, 21,7%, 26,5% and 32,5%. Probit analysis is used to determine the LC₅₀ of essential oils from Cinnamon (*Cinnamomum burmannii*) bark. It can be concluded that the smaller the concentration of essential oils given to rBMSCs, the higher the percentage of cell life. In this study, the concentration of essential oils which can kill 50% of rBMSCs was 0,004%.

Keywords: Cytotoxicity, *Cinnamomum burmannii*, essential oil, rBMSCs, MTT assay

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INTRODUCTION

The bark of various types of cinnamon is one of the most important and popular spices used throughout the world, not only for cuisine but also for traditional and modern medicine. In total about 250 species have been identified among the genus of cinnamon and these plants are spread throughout the world [1]. Cinnamon species that native plant from Indonesian is *Cinnamomum burmannii* or commonly known commercially as Cinnamon Koerintji [2, 3, 4]. Various studies have been conducted to reveal more in the medical value of cinnamon than as a spice. The uses of traditional cinnamon are for astringents, disinfectants and antispasmodics [5]. The research conducted in India found that in vitro incubation of cinnamon extract caused an increase in insulin release [6]. Essential oil from cinnamon bark is generally used at a dose of 0.05 to 0.2 g daily as an antidiabetes drug [7].

According to Ravindran, *et al.* (2004) stated that the largest content in cinnamon essential oil is cinamaldehyde, around 51-76% [8]. Adawiyah, *et al.*, (2015) reported that the amount of cinamaldehyde for consumption not more than 700µg / kg [9], showed rats given cinnamon extract in doses of 0.1-2.0g / kg orally resulted in damage to the liver and kidneys. Another researcher reported on their research that on bioassay screening of essential oils from 4 kinds of medicinal plant extracts showed that cinnamon oil (*Cinnamomum zeylanicum*) has very strong cytotoxic properties, with the value from lethal concentration (LC₅₀) of 0.03 mg / ml [10].

Essential oil from cinnamon bark which has been increasingly known for it is medical potential based on

previous research, cytotoxic testing is needed to determine its safety. A toxicity test is a test used to determine safe levels of drugs or other chemicals carried out with experimental animals or other biological materials [11]. However, the cytotoxicity effect of essential oils on rat bone marrow mesenchymal stem cells has never been done. According to Griffin, *et al.*, (2010) showed that bone marrow-derived mesenchymal stem cells (BMSCs) are multipotent stem cells and are important cell sources for engineering purposes in terms of cell therapy and tissue repair, these cells are believed to be more sensitive than other cells [12]. Therefore, this study was conducted to determine the cytotoxicity effects of essential oils from Cinnamon (*Cinnamomum burmannii*) bark on rat bone marrow mesenchymal stem cells and to determine the value of lethal concentration 50 (LC₅₀).

MATERIAL AND METHODS

The study was conducted at the Stem Cell Research and Development Center, Campus C Airlangga University, Mulyorejo, Surabaya, East Java 60115. The distillation process of essential oil from Cinnamon (*Cinnamomum burmannii*) bark was carried out at PT. Heptasari Unggul, Jl. Demak No. 289, Surabaya, East Java 60179.

This study used rat bone marrow mesenchymal stem cells (BMSCs) which is obtained from the Stem Cell Research and Development Center, Airlangga University. The primary cell culture rat BMSCs was stored in a deep freezer at -80 °C in a freezing medium. First, the cell must go through the thawing process. The cells were pipette into a conical tube that already contained αMEM media,

then centrifuged for 5 minutes at 2400rpm. The media is removed and replaced with the new α MEM media, then centrifuged again at the same speed. This washing process is done twice to remove the remaining DMSO [13]. The formed supernatant is thrown into the glass jar so that only cells in the form of deposits remains on the bottom of the tube or called pellet. After that pellet are diluted with 10ml α MEM, then taken using a filler pipette and placed in a \emptyset 10 cm petri dish to cultivated the cell.

The rat bone marrow mesenchymal stem cells (rBMSCs) were used in 96 well microplates. This study consisted of 5 treatment groups with 6 repetitions, K (-) or media controls which only contained cell growth media (α -MEM) and K (+) or cell controls containing rBMSCs and α -MEM media. The treatment group consisted of, group giving essential oil 0.5%, group giving essential oil 0.25%, group giving essential oil 0.125%, group giving essential oils 0.0625%, and group giving essential oils 0.0312%. The treated cells were then incubated for 24 hours in a CO₂ incubator at 37 ° C. 3-(4,5-dimethylthiazol-2-yl) 2,5-diphenyl tetrazolium bromide (MTT) dissolved in Phosphate Buffered Saline (PBS) 5 mg / ml then added to the microplate 96-well as much as 10 μ l per each well, then incubated again for about 4 hours at 37 °C. All media in the well and test material are discarded. Then, each well is added to 50 μ l -100 μ l of DMSO (Dimethylsulfoxide).

Formazan crystals formed due to the reduction of MTT salts by dehydrogenase enzymes in living cells are then dissolved with DMSO. The absorbance value is read by ELISA reader with a wavelength of 595nm. The research data obtained in the form of Optical Density (OD) values were analyzed using the ANOVA test and calculated the LC₅₀ value.

RESULTS AND DISCUSSION

The results which viewed through ELISA reader with a wavelength of 595nm in this study were in the form of Optical Density (OD), as shown on table 1. The OD value is obtained through the color changes which produced by mitochondrial activity, where the dehydrogenase enzyme in living cells is able to reduce the yellow MTT salt to form blue / purple formazan crystals. The darker colors were produced, the higher the OD value. Optical density values represent the number of living rBMSCs so that the greater the optical value of density shows the greater the number of living cells.

In figure 1, showed the percentage of living cells of rat BMSCs after being treated with essential oil from Cinnamon (*Cinnamomum burmannii*) bark with different concentrations. The percentage of living rat bone marrow mesenchymal stem cell after being given essential oil from cinnamon bark with a concentration of 0,5% was as much as 12,886% . At a concentration of 0,25% , the percentage of living cells was as much as 18,364%. At a concentration of 0,125% , the percentage of living cells was as much as 21,768%. At a concentration of 0,0625% , the percentage of living cells was as much as 26.554%. At a concentration of 0,0312% , the percentage of living cells was as much as 32.551%.

Observations using a microscope showed that the concentration of essential oil from Cinnamon (*Cinnamomum burmannii*) bark affected the number of living cells. The smaller the concentration of essential oil from cinnamon bark given, the higher the number of living cell. In figure 2. showed that the concentration of 0,0312%

produces the highest percentage of living cell when compared with other concentrations.

Probit analysis was done to determine the concentration of lethal cell 50 (LC₅₀) on rat bone marrow mesenchymal stem cell. The concentration of essential oil from Cinnamon (*Cinnamomum burmannii*) bark which can kill 50% (LC₅₀) of rat bone marrow mesenchymal stem cell which tested is 0,004%.

The highest percentage of rat bone marrow mesenchymal stem cell (rBMSCs) life is 32,5% which occurs at a concentration of 0,312% while the lowest percentage of cell life occurs at a concentration of 0,05% which is 12,8%. This shows that the lower the concentration of essential oil from cinnamon bark that is given, the higher the percentage of the life of rBMSCs. The higher the concentration consist the higher the active substance. Cinnamaldehyde and eugenol are the most active ingredients contained in cinnamon. The presence of cinnamaldehyde in the essential oil of *C. burmannii* has been responsible for the observed cytotoxicity. The cytotoxicity of cinnamaldehyde acid has been reported previously [14]. Cinnamaldehyde is toxic to larvae by entering the body of the larvae through the respiratory system which results in nerve disorders and damage to the respiratory system, causing death [15].

The mesenchymal stem cells of rat bone marrow after being given with cinnamon essential oil with a concentration of 0.5% and then incubated in 5% CO₂ incubator at 37 ° C for 24 hours produced the smallest percentage of cell life. This situation seems to be in accordance with the opinion of Adriani, *et al.*, (2010) stated that cinnamaldehyde has a toxic mechanism that can inhibit energy metabolism in cells. This causes the cell to fail to adapt to the material [16].

In this study the graphic percentage of living cell was decreased, that in cinnamon essential oil with a concentration of 0,0312%, 0,0625%, 0,125%, 0,25% and 0,5% showed the life of stem cells of rat bone marrow in succession 32,5%, 26,5%, 21,7%, 18,3% and 12,8% respectively. This result shows compatibility with the previous theory which state that the toxicity of a material is directly propotional to exposure. Exposure of material has a determining factor, that was the concentration of the material [17]. This shows that all concentrations of essential oils of *C. burmannii* have the same effect, namely decreasing the percentage of cell life and the greater the concentration given the smaller the percentage of cell life. This result seems similar to research, on the toxicity of *C. burmannii* essential oil on fibroblast cell culture, that the graph of the percentage of the life of fibroblast cells increases when the amount of essential oil concentration given decreases [18]. An experimental cytotoxicity test of cinnamon oil on WiDr cells, and the highest percentage of cell viability was achieved using the smallest concentration [19].

Bioassay screening of essential oils in *Cinnamomum zeylanicum* conducted by Sharififar, *et al.*, (2009) showed a strong cytotoxicity potential of essential oils , which is have value of LC₅₀ on 0.03mg / ml [10]. In essential oils from *Cinnamomum burmannii* in this study, after being analyzed by probit analysis showed LC₅₀ values of 0,004%. This result is much smaller than previous research. The use of stem cell mouse marrow is possible to be one factor because these cells are more sensitive than other cells.

An essential oil that is derived from *Cinnamomum cassia* stem bark, coumarin has been successfully isolated. Due to

the potential for high levels of coumarin, it may cause hepatotoxicity [20]. Trans-cinnamaldehyde (TCA) has been identified as one of the bioactive compounds in *Cinnamomum burmannii*, in research showing that trans-cinnamaldehyde can inhibit cell proliferation and induce apoptosis. The mechanism of apoptosis by cinnamaldehyde is the production of Reactive Oxygen Species (ROS). Cinnamaldehyde from *Cinnamomum casia* is a potent inducer of apoptosis and that it transduces the apoptotic signal via ROS generation, thereby inducing mitochondrial permeability transition (MPT) and cytochrome release to the cytosol [21]. Cinnamaldehyde induce cell death was characterized by changes in nuclear morphology, DNA fragmentation, and cell morphology [22]. Treatment with cinnamaldehyde was caused by a rapid loss of mitochondrial transmembrane potential, stimulation of ROS production [23], the release of mitochondrial cytochrome c into cytosol and subsequent induction of procaspase-9 and procaspase-3 processing. Thus in this study, cinnamaldehyde from *Cinnamomum burmannii* is also likely to induce apoptosis.

CONCLUSION

Essential oil from cinnamon (*Cinnamomum burmannii*) bark at a concentration of 0,5% produces the lowest percentage of living rat bone marrow mesenchymal stem cell and at a concentration of 0,0312% produces the highest percentage of living rat bone marrow mesenchymal stem cell. The concentration of essential oil from cinnamon (*Cinnamomum burmannii*) bark which can kill 50% (LC₅₀) of rat bone marrow mesenchymal stem cell is 0,004%.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Table 1. Optical Density (OD) result from rat bone marrow mesenchymal stem cell after exposed with essential oil from Cinnamon (*Cinnamomum burmannii*) bark for 24 hours

Treatment	Optical Density (OD) Value					
	1	2	3	4	5	6
Media control	0,095	0,096	0,094	0,098	0,093	0,096
Cell control	0,561	0,565	0,572	0,565	0,597	0,522
Essential oil 0,5%	0,156	0,165	0,151	0,153	0,159	0,156
Essential oil 0,25%	0,181	0,180	0,174	0,193	0,192	0,184
Essential oil 0,125%	0,219	0,196	0,223	0,154	0,198	0,201
Essential oil 0,0625%	0,238	0,215	0,223	0,206	0,211	0,197
Essential oil 0,0312%	0,244	0,253	0,241	0,256	0,242	0,257

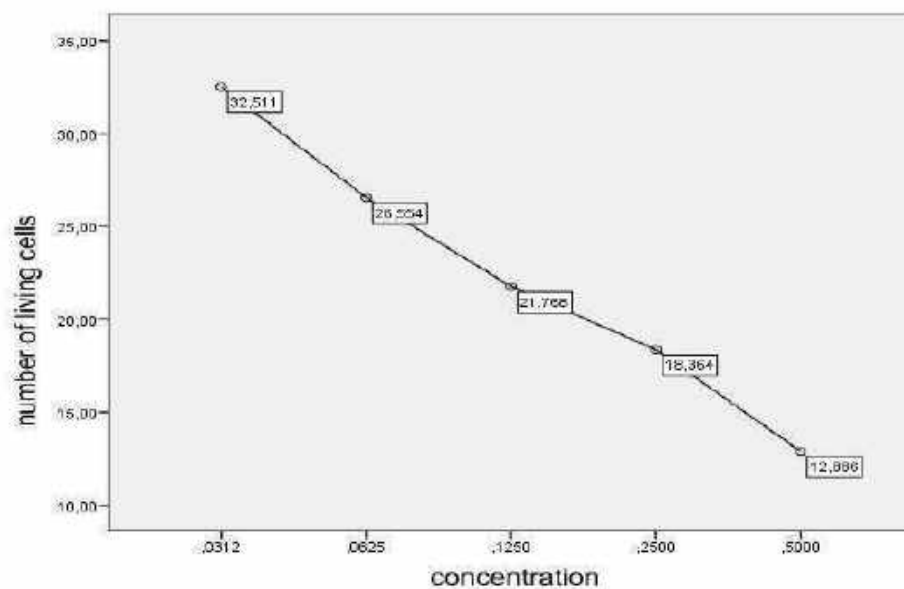


Figure 1. Comparison of the percentage of living rat BMSCs after treated with essential oil from Cinnamon (*Cinnamomum burmannii*) bark with different concentrations.

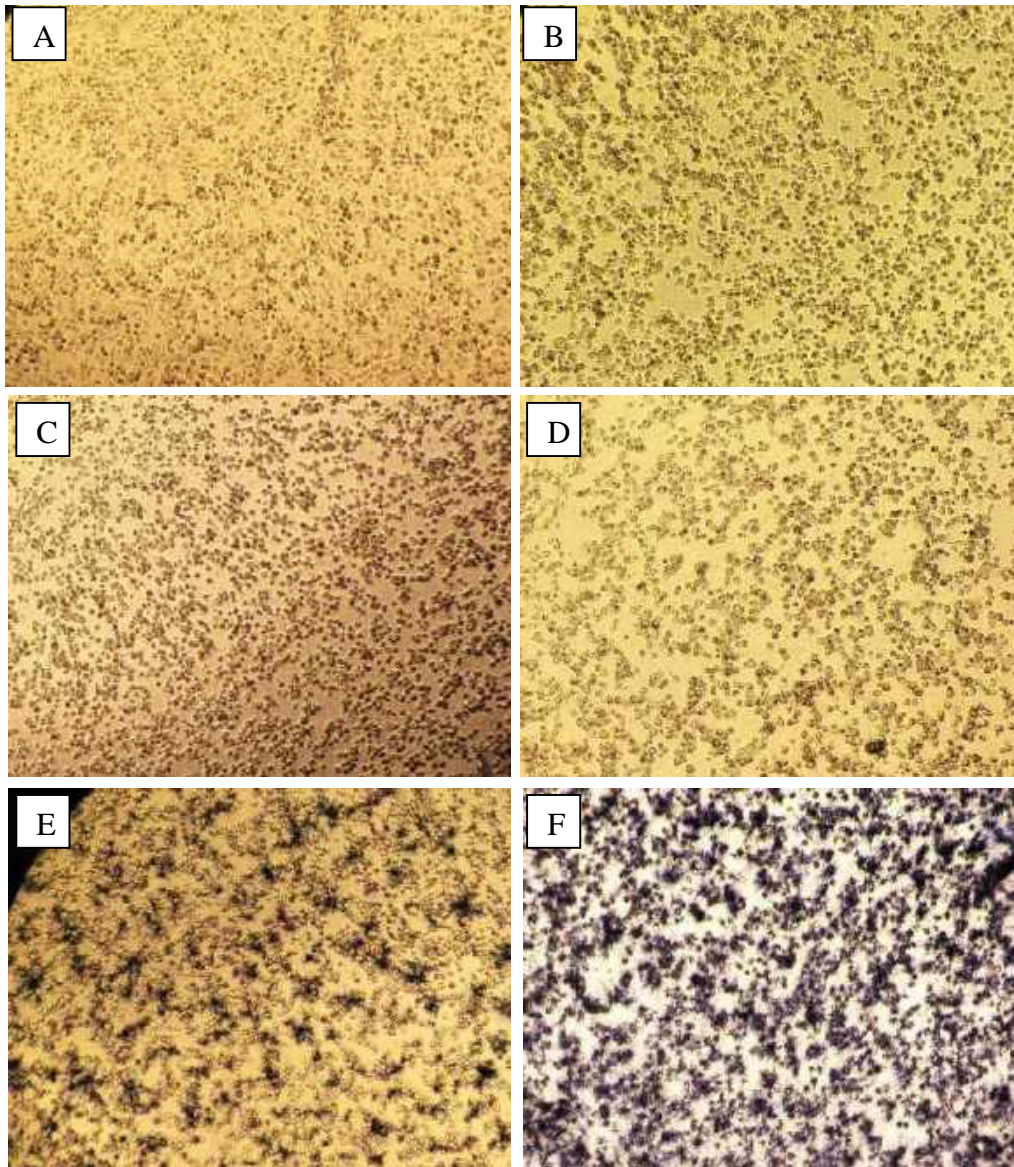


Figure 2. Overview of rat BMSCs after exposed with essential oil from Cinnamon (*Cinnamomum burmannii*) bark, using inverted 100x microscope. A. 0,5% of concentration. B. 0,25% of concentration. C. 0,125% of concentration. D. 0,0625% of concentration. E. 0,0312% of concentration. F. Control cell.