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## Research Article

### Evaluation the Effect of Pulmicort Inhalation on Children with Acute Asthma Attack

👤 *Ahmad Bahrami, Shabahang Jafarnejad, Hamidreza khoshnezhad Ebrahimi, Seyedeh Mahsa Mahmoudinezhad Dezfouli, Rozhin Pahlevani.*

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

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.132

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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

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.37

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## Research Article

### 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.*

SRP. 2020; 11(9): 518 - 521

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.76

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## Review Article

### 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.*

SRP. 2020; 11(9): 6 - 9

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.02

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## Research Article

### 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.*

SRP. 2020; 11(9): 642 - 653

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.95

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## Research Article

### Juvenile Delinquency Measurement in Indonesian High Schools

👤 *Syariful, Akif Khilmiyah, Siswanto Masruri.*

SRP. 2020; 11(9): 522 - 527

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.77

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## Research Article

### Prevention and Treatment Approaches in Children with the Coronavirus

👤 *Shaqayeq Khosravi, Seyedeh Mahsa Mahmoudinezhad Dezfouli.*

SRP. 2020; 11(9): 913 - 919

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.133

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## Research Article

### 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.*

SRP. 2020; 11(9): 234 - 238

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.38

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## Research Article

### Extract Standardization in Ethyl Acetate Fraction from Sargassum Hystrix as Inhibitor of $\alpha$ -Amylase and $\alpha$ -Glucosidase

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

SRP. 2020; 11(9): 528 - 534

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.78

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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.*

SRP. 2020; 11(9): 535 - 543

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.79



## Research Article

### [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.


SRP. 2020; 11(9): 920 - 925

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.134

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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.


SRP. 2020; 11(9): 544 - 561

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.80

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## Research Article

### [Effect of Diabetic Ketoacidosis on Some Biochemical and Immunological Variables](#)

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

SRP. 2020; 11(9): 239 - 242

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.39

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## Research Article

### [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.

SRP. 2020; 11(9): 926 - 930

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.135

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## Research Article

### [Mechanisms for Managing Medical Institutions in Times of Crisis](#)

 Anastasia Barzylavych, Bubalo Volodymyr, Nesterenko G. Valentyna, Rogachevskiy Oleksandr, Chornyi Oleg.


SRP. 2020; 11(9): 562 - 568

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.81

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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.


SRP. 2020; 11(9): 569 - 574

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.82

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## Research Article

### [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, Iswatun, Supatmi, Nuh Huda.


SRP. 2020; 11(9): 654 - 660

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.96

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## Research Article

### [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.

SRP. 2020; 11(9): 243 - 247

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.40

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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.


SRP. 2020; 11(9): 931 - 937

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.136

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## Research Article

### [Social Network for Drug Circulation in Sidenreng Rappang Regency, Indonesia](#)

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

SRP. 2020; 11(9): 575 - 577

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.83

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## Review Article

### [The Mucosal Lesions on Removable Denture Wearers: A Systematic Review](#)

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


SRP. 2020; 11(9): 10 - 14

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.03

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## Research Article

### [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.


SRP. 2020; 11(9): 248 - 259

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.41

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## Research Article

### [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 Alhmoud, Atef Al-Othman, Khalid M Alqaisi, Ali M Atoom, Khalid Shadid, Ashok Shakya, Talal AlQaisi.


SRP. 2020; 11(9): 661 - 667

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.97

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## Research Article

### [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.

SRP. 2020; 11(9): 938 - 952

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.137

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#### Research Article

### 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.


SRP. 2020; 11(9): 260 - 263

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.42

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#### Research Article

### 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.


SRP. 2020; 11(9): 668 - 675

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.98

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#### Research Article

### 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.


SRP. 2020; 11(9): 953 - 956

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.138

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#### Review Article

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

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

SRP. 2020; 11(9): 15 - 19

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.04

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#### Research Article

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

 Ghalib Adrees Atiya Ali, Mohammed Nsaif Abbas.


SRP. 2020; 11(9): 264 - 271

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.43

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#### Research Article

### 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.


SRP. 2020; 11(9): 957 - 961

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.139

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#### Research Article

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

 Bambang Raditya Purnomo, Anis Eliyana, Windra Alfatah Surya.


SRP. 2020; 11(9): 676 - 686

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.99

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#### Research Article

### 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.


SRP. 2020; 11(9): 272 - 276

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.44

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#### Research Article

### 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.


SRP. 2020; 11(9): 962 - 971

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.140

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#### Research Article

### 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.


SRP. 2020; 11(9): 277 - 286

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.45



## Research Article

### 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.

SRP. 2020; 11(9): 972 - 981

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.141

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## Review Article

### 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.


SRP. 2020; 11(9): 20 - 25

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.05

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## Review Article

### 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.


SRP. 2020; 11(9): 687 - 698

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.100

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## Research Article

### 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.


SRP. 2020; 11(9): 287 - 298

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.46

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## Research Article

### 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.

SRP. 2020; 11(9): 699 - 712

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.101

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## Review Article

### Periodontal Status of Drug Abuser in Makassar

 Nursyamsi Djamaluddin, Bagus Setiawan.

SRP. 2020; 11(9): 26 - 30

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.06

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## Research Article

### 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 Uppamaiathichai, Supat Chupradit.

SRP. 2020; 11(9): 713 - 718

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.102

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## Research Article

### 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.


SRP. 2020; 11(9): 982 - 992

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.142

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## Review Article

### 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.

SRP. 2020; 11(9): 31 - 34

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.07

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## Review Article

### mHealth Interventions for Cancer Care and Support A Systematic Literature Review


 Samar Zuhair Alshawwa, Rasha Assad Assiri.

SRP. 2020; 11(9): 725 - 744



## Research Article

### [Impact of Complications after Surgical Treatment of Colon Cancer on Survival](#)

 *Bekisheva Aizhan, Makishev Abai, Yoshihiro Noso.*

SRP. 2020; 11(9): 993 - 1002

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.143

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## Review Article

### [Quality of Dental Health Service in Indonesia: A Pilot Pathfinder Survey](#)

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


SRP. 2020; 11(9): 35 - 42

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.08

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## Research Article

### [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.*

SRP. 2020; 11(9): 299 - 311

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.47

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## Research Article

### [The Role of Folic Acid on Some Physiological Parameters and Efficiency of Sperm in Male Rabbits](#)

 *Rashad Fadhil Ghadhban, Nawras A. Alwan.*

SRP. 2020; 11(9): 1003 - 1007

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.144

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## Research Article

### [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.*

SRP. 2020; 11(9): 745 - 750

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.105

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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 Veva Kalista, Budiastuti; Mustofa Helmi Effendi.*


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

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.145

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## Research Article

### [Boosting Organizational Commitment Through Visionary Leadership and Work Life Balance](#)

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


SRP. 2020; 11(9): 312 - 322

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.48

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## Review Article

### [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.*


SRP. 2020; 11(9): 43 - 51

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.09

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## Review Article

### [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.*

SRP. 2020; 11(9): 52 - 59

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.10

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## Review Article

### [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

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.146

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## Research Article

### [Observational Learning and Word of Mouth Against Consumer Online Purchase Decision during the Pandemic COVID-19](#)

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


SRP. 2020; 11(9): 751 - 758

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.106

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## Research Article

### [The Role of Organizational Justice Dimensions: Enhancing Work Engagement and Employee Performance](#)

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

SRP. 2020; 11(9): 323 - 332

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.49



**Review Article**

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

**Eny Susanti, I Ketut Sudiana, Hendy Hendarto.**

SRP. 2020; 11(9): 60 - 65

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.196

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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

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**Research Article**

**ENHANCING EMPLOYEE PERFORMANCE WITH WORK MOTIVATION AS A MEDIATION VARIABLE**

**Qori Al Banin, Anis Eliyana, Eva Risalatul Latifiyah.**

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

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**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.**

SRP. 2020; 11(9): 347 - 362

[» 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**

**Akvyan 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 Education 4.0 Era**

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

SRP. 2020; 11(9): 363 - 373

[» 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.**

SRP. 2020; 11(9): 74 - 78

[» 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**

 *Budiasuti, 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. Elshahookie, 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 Ikbali, 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 Authoritative 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*

SRP. 2020; 11(9): 584 - 591



**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 Zanza 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, Najeed 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 Acehnese 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

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**Research Article**

**Distance Education as an Alternative Form of Learning During a Pandemic**

**Nataliia Kaliuzhka, Nelia Samoilenko, Larysa Zdanevych, Olesia Kyselova, Nataliia Terentieva, 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, Pughu 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

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#### 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

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#### 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-Samarae, 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

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#### 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

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#### 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 Asvaroza 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

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#### 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

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#### 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

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#### 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.


SRP. 2020; 11(9): 606 - 612

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.89



#### Review Article

##### [Studies on microRNA in Pediatric Tuberculosis](#)

 *Ayling Sanjaya, Dwi Yuni Nur Hidayati, Susanthy Djajalaksana, HMS Chandra Kusuma, Sumarno.*


SRP. 2020; 11(9): 1143 - 1149

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

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#### Research Article

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

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


SRP. 2020; 11(9): 187 - 194

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.31

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#### Research Article

##### [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.*

SRP. 2020; 11(9): 474 - 477

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.67

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#### Research Article

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

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


SRP. 2020; 11(9): 613 - 616

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.90

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#### Review Article

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

 *Elaf Sameer and Rawa Abdul Redha Aziz.*


SRP. 2020; 11(9): 1150 - 1162

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.166

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#### Research Article

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

 *Ratna Dwi Wulandari, Agung Dwi Laksono.*


SRP. 2020; 11(9): 872 - 876

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.126

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#### Research Article

##### [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.*

SRP. 2020; 11(9): 617 - 626

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.91

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#### Research Article

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

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

SRP. 2020; 11(9): 195 - 200

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.32

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#### Research Article

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

 *Nataliia Malinovska, Valentyna Borova, Valentuna Benera, Vadym Shemchuk, Iryna Gogol, Ihor Androshchuk.*

SRP. 2020; 11(9): 478 - 480

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.68

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#### Research Article

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

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


SRP. 2020; 11(9): 1163 - 1170

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.167

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#### Research Article

##### [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.*


SRP. 2020; 11(9): 627 - 631

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.92

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#### Research Article

##### [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.*

SRP. 2020; 11(9): 877 - 882

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.127

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#### Review Article

##### [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.*


SRP. 2020; 11(9): 481 - 486

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.69

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#### Research Article

##### [Molecular Pharmacology Study of Andrographolide Extracted from Andrographis Paniculata on Atherosclerosis Preventive Effect](#)

 *Ni Kadek Warditiani, Pande Made Nova Armitha Sari, Yan Ramona, Made Agus Gelgel Wirasuta.*


SRP. 2020; 11(9): 201 - 206

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.33

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#### Research Article

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

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

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

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.128



#### 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.*


SRP. 2020; 11(9): 79 - 88

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

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#### Research Article

### [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.*


SRP. 2020; 11(9): 207 - 213

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.34

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#### Research Article

### [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.*

SRP. 2020; 11(9): 487 - 493

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.70

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#### Research Article

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

 *Warqa a Muhammed Shariff Al-Sheikh.*


SRP. 2020; 11(9): 632 - 635

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.93

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#### Research Article

### [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.*


SRP. 2020; 11(9): 888 - 892

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

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#### Research Article

### [Slow Released Fertilizer of Fe<sup>2+</sup> and Mn<sup>2+</sup> from Composite Micronutrient Chitosan-Silica](#)

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


SRP. 2020; 11(9): 499 - 502

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.72

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#### Research Article

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

 *Wedad Salih Dawood.*

SRP. 2020; 11(9): 214 - 223

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.35

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#### Research Article

### [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.*


SRP. 2020; 11(9): 893 - 898

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.130

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#### Research Article

### [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.*


SRP. 2020; 11(9): 503 - 509

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

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#### Research Article

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

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


SRP. 2020; 11(9): 636 - 641

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

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#### Research Article

### [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.*


SRP. 2020; 11(9): 224 - 228

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.36

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#### Research Article

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

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

SRP. 2020; 11(9): 510 - 513

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.9.74



## Research Article

### 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

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## 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



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

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## ABSTRACT

The review study will describe clearly related research about *Citrobacter freundii* in piglet intestines which has been known to play a very important role in animal health and its effects on aspects of public health. Thus, the existence of *Citrobacter freundii* as a pathogenic opportunistic bacterium as a result of weaning plays an important role in the formation and maintenance of the intestinal microbiota which affects the health and growth performance of pigs in the future. The review discussed the presence of *Citrobacter freundii* in the intestines of healthy pigs and its presence during the weaning period. The review explains comprehensively related research findings regarding the cytotoxicity of *Citrobacter freundii* and its resistance to several antimicrobials and provide an overview of recent studies that could help facilitate the design of a new strategy for conducting further research on *Citrobacter freundii* in pigs.

**Keywords:** *Citrobacter freundii*, microbiota, piglets, antimicrobial resistance, public health

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## INTRODUCTION

Scraps are home to diverse communities of microbial species that have a symbiotic link to pigs. In maintaining the dietary, physiological, and immunological functions of pigs, the gut microbiot population, or microbiota, has an important role[1]. But the microbial community also comprises species that cause disease such as *Escherichia coli*, *Salmonella*, *Clostridia* and *Citrobacter*. The disease and death of these pathogenic organs will occur. Thus, in the livestock industry the use of prophylactic antibiotics was widely used. Disturbance during pig breeding of the intestinal microbial ecosystem will significantly increase disease risk. Piglets are weaned until a healthy microbial population is formed and the immune system matures in order to speed up their development. Weaning stress will interact with the intestinal microbial ecosystem[2], thus rendering it more vulnerable to post-weaning bacteria [3]. This condition is prevented with prophylactic antibiotics, which decreases the occurrence of GDD, particularly when weaning. Increased antimicrobial resistance has been caused by prophylactic antibiotics and by growth-foster antibiotics and is now a significant global public health problem[4].

*Citrobacter Freundii* is a *Citrobacter* family bacteria which is a natural environment in both the human and animal intestinal tract[5]. *Citrobacter Freundii* is a member of the genus *Citrobacter*. But that is *C. Freundii* can also contribute to diarrhoea and other human infections[6]. A few *C. Freundii* isolates are characterised by virulence and cause human food poisoning or diarrhea[5]. The major factors of virulence observed in *C.*

caused diarrhoea. *Freundii* are toxins that are homologated to cholera subunitB[5], including toxins such as shiga, a heat-stable toxin.

In order to shape the microbial communities of the pig's intestines, the microbial composition of the intestines is established by various internal and external influences such as diet changes as well as probiotic and prebiotic provision and antibiotic supplementation in the feed [7]. Weaning is therefore an essential period of development and stress in animals in the early stages of life. The intestinal dynamics of piglets, especially *Citrobacter* bacteria during the weaning transition, are therefore interesting because they affect the health and production of growth of piglets. The results of the most recent and relevant research, which focuses on *Citrobacter* in the intestines of piglets, that affect piglets health, will be examined in this review.

## **Citrobacter the member of Enterobacteriaceae**

Both *Enterobacteriaceae* members share such bacteriological characteristics. It belongs to the gram-negative, rod-shaped and optional anaerobic community. Species of 1.0 x 2.0-6.0 µm *Citro* bacteria. The bacteria are solitary or colonial, have no capsule and are motile. *C.* In the medium of MacConkey Agar, the *freundii* shaped small, round, dark pink convex colonies. Also recorded were rough or slimy forms. At a certain temperature of 37 °C, *Citrobacter* grows optimally[8]. *Citrobacter* is present in a range of environmental sources, including soil and water, and in human and animal digestive tracts. These bacteria rarely cause illness, although some species can lead to infection of the urinary tract, sepsis and



meningitis in children. These bacteria play an important part in public health as pathogenic opportunisms in the incidence of food-borne illness.

A major taxonomic revision has taken place in the *Citrobacter* genus, using a new DNA-based technology. This genus is made up of 11 species called: *Freundii Citrobacter*, *C. (C. diversus)*, formerly), *C. C. Amalonacea*, *C. Oh*, youth, *c. Farmhouse*, *C. Farmhouse. braakii*, *c. braakii Werkmani*, *C. Werkmanii Sedlakii*, *C. Sedlakii. C murliniae* and *C. Gillenii Rhodes* [9]. Everything except *C. Everything animals. Rodentium* (mice pathogen) from human clinical specimens have been described. But that is *C. C* and *freundii. C* and *Koseri*. The most significant pathogens of human beings are *braakii*. In water, the soil, the food and intestinal tract of animals and humans, *Citrobacter braakii* is commonly found[10]. *C. In the peritoneum of the patient, braakii* can cause acute peritonitis [11]. Eight isolates of *C* were identified in a study carried out by Liu *et al.*[6]. Two of them came out from pork. *Braakii* was from food. Additional studies to decide if *C* is needed. *Braakii* is a diarrheal disease contributor.

#### Composition of *Citrobacter* in healthy pigs

As an Enterobacteriaceae member of the intestine of each individual pig, the population of *Citrobacter* varies widely [12]. If Enterobacteriaceae is excluded, *E. The bulk of the sample was still dominated by coli. E* is the most common component of the pig intestinal Enterobacteriaceae. Craftsman. However, the amount of *E* in such samples. Often *coli* was lower than Enterobacterium cloacae and *Citrobacter Freundii* and *Klebsiella pneumoniae*. Dominant species or *E* species. *Coli* that prevails in certain regions of the intestine, other sections of the intestine are not generally identified. Various *E* colonies. In the intestinal tract of pigs, *coli* are always present whereas other Enterobacteriaceae are often present in a particular intestinal colony[13]. This indicates that only one colony of species other than *E* can be included in the observations. *Coli* in some part of the gut or just one colony dominating at all times, so it can't be found in other colonies. However, since Enterobacteriaceae species other than *E*, another possibility may occur. In animal populations, *coli* may also be very diverse. In a previous study in Australia there was high diversity with *C* of the gut Enterobacteriaceae of many mammals. *Fridays* [14]. *Freunday. C. Friday E. E. Coli, E. Coli, E. And K. Cloacae. As dominant Enterobacteriaceae in pigs, pneumoniae* were all isolated. Distribution information for hosts other than *E* from Enterobacteriaceae. The pathogenicity of *coli* is normally related. *C. Friday, E. Smith, K. Apples and L. Apples. Skilled pathogens are known as adecarboxylates. Most data related to this species relate to human infection*[15].

Pigs have also been shown to have *citrobacter gallbladder* populations [16]. 93 samples had bacteria out of the 145 gallbladder samples investigated and 79 were Gram-negative bacteria. Three were *Citrobacter freundii*, fifteen of them *Salmonella spp.*; forty-three were *Escheriza coli*, and three were of *Klebsiella spp.*; three were of *Aeromonas hydrophila*; three were of *Kronobacter sakazakii* and *E. T* and *fergusoni*. One *Guamensis*, one *Enterobacter spp*, and one 7 each. While its clinical value is not well known to animals, it can cause diarrhoea to resemble mild salmonellosis, much as in humans. In addition, carriers may be a cause of human enteric problems. *C. Freundii* is a commensal microorganism which isolated from severe infections in humans[17] but

which has not been widely reported to be of clinical significance to animals. Its pathogenicity is due to the resistance 's multi-drug nature[18]. It can affect the course of an infectious disease and prevent immune response and the host-pathogen interaction[19]. its capacity to gain resilience genes is important. Pathogenic microorganisms can therefore live in the ball blower of pigs temporarily or indefinitely, thereby becoming a reservoir for Gram negative bacteria contaminating pig products and infecting consumers.

#### Weaning transition and effect of *Citrobacter freundii* on the intestinal microbiota of piglets

Weaning is the most important thing in increasing production to improve the productivity of pig production .. The weaning is the sudden separation of the piglets from the sow which leads to stressful changes which can cause intestinal and immune problems, which can lead to lower health and growth output of the pigs[20]. Piglets are usually subjected to a number of stressors during the weaning period, including the abrupt shift in the diet from milk to solid vegetable food. The degradation induces physiological changes in the intestinal structure and function[21]. In addition, after inducing different causes, the intestinal microbiota of piglets is induced during weaning rather rapidly. During the pig's transition time the change in commensal bacterial structure is referred to as a microbial shift[22].

One of the key factors that influence the transition from simple to more complex nutrient sources in microbiota piglets during weaning is the sudden shift in diets which can influence the absorption ability of the small intestine and probably affect growth and feed performance. The weaning period is of great importance because piglets are exposed to thousands of bacteria, that may play an important role in the construction of adult pigs' gut microbiota[23]. Microbial exposure is important in early life for rising, developing the immune system and pig health[24]. Furthermore, during the weaning period microbiota formation plays a major role because piglets are often immature and rely upon porkmilk to avoid colonisation and over-crop of opportunistic pathogens[25]. Therefore the gut microbial succession in the weaning transition has to be better understood and which factors affect swine gut microbial changes with a view to improving the digestive health, development, and well-being of piglets.

The weaning duration is an integral part of the pig's lives as the microbial composition of the intestines and the immune system continues to evolve, making swine vulnerable to pathogenic substances that cause post-weaning diarrhoea[26]. In the swine field, diarrhoea has become a major cause and increased death. In recent years, interesting evidence has been increased for the incidence of diarrhoea, not simply unique pathogenic agents, by the intestines microbiota[24]. The gut microbiota is recognised as defending against pathogens by controlled immune response from the host. The key group of bacteria of the terminal ileum of weaning piglets has been identified for example, segmented filamentous bacteria (SFb) or *Candidatus arthromitus*, recognised as modulators of the Immune system mammalian[27].

Piglets undergo a temporary decline in feed or anorexia during the weaning process which can lead to inflammation of the intestines[28]. In a recent study, colitis leading to a microbiota imbalance[30] has been the mechanism of Guevarra *et al.* The host reaction in intestinal conditions induces reactive oxygen, since nitric



(NO) oxide can be rapidly transformed from released into the intestinal lumen into nitrate (NO<sub>3</sub><sup>-</sup>). [30] The rich nitrate environment is very beneficial to Enterobacteriaceae growth that covers the gene nitrate reductase [31]. Several enterotoxigenic E pathogens in the family of enterobaceae, namely *Salmonella enterica* serovar Typhimurium. *Coli* (ETEC), caused by pigs, can cause intestinal inflammation, disrupting the composition of microbiota [32, 33]. In studying the *Salmonella typhimurium* model, Arguello *et al.* [34] showed that there was a decline in the populations of bacteria needed, such as *bifidobacterium*, and *lactobacillus*, with an increase in pathogenic bacteria as *Citrobacter* and anaerobic decrease, namely *Clostridium*, *Ruminococcus*. Or *diallister* on weaned piglets' ileal mucosa. Intestinal inflammation due to weaning thus disrupts the intestinal microbiota, promoting in particular Enterobacteriaceae, which promotes the growth of enteropathogenic bacterias. More study is therefore required to understand the effect of colitis on intestinal microbiota impairments in piglets after weaning [35].

#### **Cytotoxicity of *Citrobacter freundii* in Pigs**

A study conducted by Bai *et al.*, [5] in a village in China, has found 26 *Citrobacter* isolates into 20 pulse types, and 2 of them from pigs and have cytotoxic activity. The isolates obtained from humans and animals have the same types of pulse. It was also found that one animal and fly isolate had the same type of pulse. This suggests that animals can act as reservoirs for human infection and flies may act as carriers of transmission. Flies are known to transmit bacteria between humans. In a study flies reported that not only as a mechanical vector, but bacteria have been found to multiply in the mouth of flies and excreted through fly feces. Both isolates have cytotoxicity and adhesion activities to HEp-2 cells. Determination of the cytotoxicity of bacteria to cells is carried out by measuring the lactate dehydrogenase produced by the cells. This treatment causes the cells to release 24.3% dehydrogenated lactate (LDH) which causes damage and cell death of > 50%.

Another study conducted by Tschape *et al.*, [15] found the verotoxinogenic properties of *Citrobacter freundii* which contaminated vegetables used in sandwiches in a nursing school. Vegetables contaminated with verotoxin from *Citrobacter freundii* are caused by the use of manure from pig feces in organic gardens. This incident causes severe gastroenteritis and haemolytic uraemic syndrome. Of the 152 people, 36 had positive test results for verotoxin using the ELISA testing method. And surprisingly, 59 isolates were found including *C. freundii* from 72 isolates and the rest were 13 isolates from *E. Coli*. This examination was performed using the dot blot hybridization techniques method on positive stool samples.

Research conducted by Liu *et al.*, [6] in the Maanshan Ahui Province of China isolated *Citrobacter* spp. from patients with diarrhea, foodstuffs, and some of them come from pork and pork. Of the 62 isolates tested, four isolates (including three *C. youngae* and one *C. freundii*) showed the strongest adhesion, with an adhesion index of > 50.25 isolates showed moderate adhesion, with an adhesion index between 1 to 50. Nineteen isolates showed weak adhesion, with adhesion index <1. The remaining isolates showed ambivalent or no adhesion. The lowest adhesion rates of each type of bacteria were *C. braakii* (25%), *C. freundii* (77%) and *C. youngae* (88%). There was no significant difference (P > 0.05) of any

adhesion between several sources (human and food) of *Citrobacter* isolates.

Another study conducted by Tajeddin *et al.*, [37] regarding the outbreak in the Islamic Republic of Iran, found 19 isolates of *Citrobacter* out of 484 samples tested. Of the 19 *Citrobacter* isolates obtained, two of them carried the *stx1* gene. In his research, this was the first time an outbreak was caused by foodborne illness with *stx1* encoded by the *C. freundii* strain. Since only a small proportion of these strains carry the *stx1* gene, it is possible that other virulence factors exist in these bacteria. Other virulence factors that have been reported for diarrhea associated with *C. freundii* include a heat-stable toxin, cholera-like *eae* and *aea*. The presence of *stx1* encoded by the *C. freundii* strain in diarrhea in this study is significant, although the clinical impact and role of this emerging strain in human pathogenicity have not been reported. The spread of Shiga toxin-producing phages by horizontal gene transfer can occur via environmental stimulation, as may antibiotics be the cause of this emergence [38].

Another study conducted by Schmidt *et al.*, [39] showed that *Citrobacter freundii* can produce Shiga-like Toxin II-Related Cytotoxin isolated from patients with diarrhea and meat. In this incident, to determine the presence of *slt*-gens associated with *Citrobacter freundii*, an examination was carried out by colony hybridization, PCR analysis, and nucleotide sequence. In testing based on the toxicity of *Citrobacter freundii* it can produce functional toxins. In his research, he found a similarity with the genes produced by the *Escherichia coli* *slt-II* group. It is suspected that this happened because of the transfer of genes between the two bacteria. Because when the neutralization test was carried out, this study showed that the cytotoxic activity of the *C. freundii* isolates could be neutralized by antibodies against SLT-II produced by *Escherichia coli*. To ensure the existence of a relationship between the generator between the two bacteria was examined using PCR and found that *C. freundii* had different results and determined that *C. freundii* had *slt-licA* and *slt-IIcB* genes toxins. This is because Shiga toxin-encoding phages are highly mobile both in regulation and transverse horizontally due to environmental influences such as exposure to antibiotics [38]. In general, lysogenic phages are important particles in population dynamics within the host, which are useful for killing sensitive bacteria and converting lysogenic to viable bacteria [40]. Guarino *et al.*, [41] have also successfully detected the presence of 18-amino-acid heat-stable enterotoxin produced by *Citrobacter freundii* and which is similar to 18-amino-acid *Escherichia coli* heat-stable enterotoxin. The role of the toxin produced by *Citrobacter* sp. in inducing diarrhea is not known, but the toxin from *Citrobacter* sp. has a biological potency similar to the toxin from *Escherichia coli*. Furthermore, this study indicated the presence of a strain of *Citrobacter* sp. which can produce 75% more toxins than *Escherichia coli*, which isolates *Citrobacter* sp. This optimization was carried out under the same conditions as *E. coli*.

#### **Antimicrobial Resistance Profile of *Citrobacter freundii* in Pig**

*C. Freundii* is a commensal, but unstudied micro-organism, which is mostly isolated from severe nosocomial infections in human beings [31] because it is clinically significant in animals. Its disorder is related to a multi-drug resistance [18]. In a study by Evangelopoulou *et al.*, the resistance level of *C* was tested. Pig galbalader



isolated freundi showed resistance to 20 of the 24 antibiotics examined. Antibiotics are amoxicillin (30 µg), azotreonam (30 µg), cefotaxime (30 µg), ceftaxitin (30 µg), cefazidime (30 µg), ceftriaxone (30 µg), cefuroxime (30 µg), colistin (50 µg), enrofloxacin (5 µg), gentamicin, gentamicin(10 µg) and enrofloxacin(15 µg), amoxicillin (30 µg), aztreonamine (30 µg), ceftaxitin (30 µg), ceftioxydin (30 µg), Cef Of the antibiotics C of all these. Aztreonam, cefotaxime, tigecycline, and doripenem were not immune to freundi. The test uses the process of disc diffusion [43]. The developmental capacity to acquire resistance genes affects the trajectory of an infection, immune-response prevention and interactions with host pathogenesis[19]. The key reservoir of multidrug resistance for multiresistant bacteria showed that pigs are the most significant. The use of antimicrobials in the feed helps to excrete gram-negative enteric pathogens which cause pork to contaminate pork products that can lead to consumer infection[44].

Multidrug resistance can be caused by the transfer of resistance genes from the various resistor genes encoded in a resistant microbe to different bacterial species encoding related antimicrobial classes[45]. Resistance to antimicrobials can be transmitted to both pathogenic and commensal pathogens[46,47], such as gram-negative bacteria[48-55] and gram-positive pathogens[56-62]. Antimicrobial resistance can also be transmitted by animal products as a virulence factor[63-67]. This can have major effects on the growth of bacteria in natural bacterial populations and may contribute to infectious diseases [19] as a way to escape the immune system. Pathogenic microorganisms may also live indefinitely or temporarily in a pig's bile blood and become a multidrug reservoir of Gram's negative bacteria, which may contaminate pork products and infect consumers.

Liu et al. also tested 82 C isolates[6] in an alternative analysis. Freundii against 17 antibiotics belonging to 10 classes of antibiotics using the CLSI recommended disc diffusion process. The 82 isolates of mainly C. Freundii have been immune to β-lactams, in particular penicillin (41.5%), cephalosporins (19.5%–98.8%) and monobactam (25%). Resistance to two quinolones: ciprofloxacin (7.3%) and levofloxacin (2.4%), aminoglycosides (2.4%–11.0%); phenicol (2.4%), sulfonamides (6.1%), tetracycline (8.5%), and nitrofurantoin (13.4%) respectively. The prevalence of resistance to cephalosporins of first generation, such as cefazolin, was 98.8% and ceftioxydin of second generation was 74.4%. In general, ceftriaxone (28.0%), ceftazidim (29.3%) and ceftioxydin (19.5%) were less resistant in this sample; in the present study, 26 isolates were multi drug (MDR), with an antibiotic resistance of three or more different class (MDR) groups.

Another study by Liu et al.[68] which isolates *Citrobacter*, found 21 isolates of *Citrobacter* after E from pork samples, pig faeces and pork farms. Craftsman. 13 isolates were multidrug resistant out of 21 isolates obtained from *Citrobacter*. High frequencies of gentamicin (98% of the isolates), streptomycin (98%), tetracycline (98%), chloramphenicol (98%), kanamycin (96%), doxycycline (80%), ciprofloxacin have been presented. (74.1%), nalidixic acid (97.4%), ampicillin (64.7%), and amoxicillin-clavulanic (60.8%) percent. (94.0%), nalidixic acid (94.1%) and trimethoprim (94.1%). In general, sulfamethoxazole, trimethoprim, tetracycline, gentamicin, streptomycin and chloramphenicol resistant isolates. In his study, 50% of the *Citrobacter* isolates isolated from

pork, but some have different antibiotic resistance profiles and are characterised by different resistant genes, to 100% homology with environmental isolates. Several recent studies have found that *Citrobacter* isolated from pork samples and hog farm conditions have antibiotic resistance[69,70]. *Citrobacter* Research has shown that pork and pig farms can be sources of resistant bacteria which can be passed on to humans by meat products in industrial chains.

## CONCLUSION

In this review it can be concluded that the microbial ecosystem in the digestive tract of piglets plays an important role in physiological functions and antibody formation. The presence of digestive tract disorders caused by factors such as stress as a result of weaning can disrupt the microbiota system in the digestive tract of piglets. This can provide opportunities for pathogenic opportunistic bacteria such as *Citrobacter freundii* to grow rapidly to form colonies that can cause disease. *Citrobacter* has the ability to produce toxins that are resistant to heating and produce shiga-like toxins which of course can disrupt the balance of the microbiota composition in the intestines of pigs. In addition, these bacteria also have the ability to mutually transfer toxin coding between other bacterial groups such as *E. coli*. Many recent studies also reveal that in general *Citrobacter freundii* is MDR which causes these bacteria to be difficult to control with certain antibiotics. In addition, the threat of *Citrobacter freundii* which is MDR can also act as a foodborne disease in meat that can potentially be transmitted to humans and have an impact on public health. In addition, these bacteria can also pollute the environment such as soil and water. The importance of further understanding about the threat of *Citrobacter freundii* which is MDR requires special attention to determine the policy of using antibiotics in a pig farm.

## REFERENCES

1. Brestoff JR, Artis D. Commensal bacteria at the interface of host metabolism and the immune system. *Nat. Immunol.* 2013; 14:676–684.
2. Konstantinov SR, Awati AA, Williams BA, Miller BG, Jones P, Stokes CR, et al. Post-natal development of the porcine microbiota composition and activities. *Environ. Microbiol.* 2006; 8:1191–1199.
3. Lallès JP, Gaëlle B, Favier C, Le Floc'h N, Luron I, Montagne L, et al. Gut function and dysfunction in young pigs: Physiology. *Anim. Res.* 2004; 53:301–316.
4. Dibner JJ, and Richards JD. Antibiotic growth promoters in agriculture: History and mode of action. *Poult. Sci.* 2005; 84:634–643.
5. Bai L, Xia S, Lan R, Liu L, Ye C, Wang Y, et al. Isolation and characterization of cytotoxic, aggregative *Citrobacter freundii*. *PLoS ONE.* 2012; 7: e33054.
6. Liu L, Lan R, Liu L, Wang Y, Zhang Y, Wang Y, et al. Antimicrobial resistance and cytotoxicity of *Citrobacter spp.* in Maanshan Anhui Province, China. *Front. Microbiol.* 2017; 8:1357.
7. Bian G, Ma S, Zhu Z, Su Y, Zoetendal EG, Mackie R, et al. Age, introduction of solid feed and weaning are more important determinants of gut bacterial succession in piglets than breed and nursing mother as revealed by a reciprocal cross-fostering model. *Environ Microbiol.* 2016; 18:1566–1577



8. Rogers L, K Power, Gaora PO, Fanning S. *Escherichia coli* and ther *Enterobacteriaceae*: occurrence and detection. University College Dublin, Dublin, Ireland. 2016; 545-551.
9. Forsythe SJ, Abbot SL, Pitout J. Klebsiella, Enterobacter, Citrobacter, Cronobacter, Serratia, Plesiomonas, and other Enterobacteriaceae. In: Jorgensen JH, Pfaller MA, Carroll KC, et al. Manual of Clinical Microbiology, 11th ed, ASM Press, Washington, DC 2015.
10. Basra P, Koziol A, Wong A, Carrillo C. Complete genome sequences of *Citrobacter braakii* strains GTA-CB01 and GTA-CB04, isolated from ground beef. *Genome Announc*. PubMed. 2015; 3, e01307-14.
11. Chao CT, Lee SY, Yang WS, Chen HW, Fang CC, Yen CJ, et al. Citrobacter peritoneal dialysis peritonitis: Rare occurrence with poor outcomes. *Int. J. Med Sci*. 2013; 10, 1092-1098.
12. Schierack P, Walk N, Reiter K, Weyrauch KD, Wieler LH. Composition of intestinal Enterobacteriaceae populations of healthy domestic pigs. *Microbiology*. 2007; 153(Pt11):3830-3837
13. Pajarillo EA, Chae JP, Balolong MP, Kim HB, Seo KS, Kang DK. Pyrosequencing-based analysis of fecal microbial communities in three purebred pig lines. *J Microbiol*. 2014; 52:646-51.
14. Gordon DM, Lee J. The genetic structure of enteric bacteria from Australian mammals. *Microbiology*. 1999; 145, 2673-2682.
15. Tschape H, Prager R, Streckel W, Fruth A, Tietze E. Verotoxinogenic *Citrobacter freundii* associated with severe gastroenteritis and cases of haemolytic uraemic syndrome in a nursery school: green butter as the infection source. *Epidemiol Infect*. 1995; 114: 441-450.
16. Evangelopoulou G, Georgios F, Spyridon K, Maria KA, Burriel AR. Isolation and antimicrobial testing of *Aeromonas spp.*, *Citrobacter spp.*, *Cronobacter spp.*, *Enterobacter spp.*, *Escherichia spp.*, *Klebsiella spp.*, and *Trabulsiella spp.* from the gallbladder of pigs. *Polish Journal of Microbiology*. 2015; 64: 2, 185-188.
17. Nayar R, Shukla I, Sultan A. Epidemiology, prevalence and identification of Citrobacter species in clinical specimens in a tertiary care hospital in India. *International Journal of Scientific and Research Publications*. 2014; 4:4.
18. Pepperell C, Kus JV, Gardam MA, Humar A, Burrows LL. Low-virulence Citrobacter species encode resistance to multiple antimicrobials. *Antimicrob. Agents Chemother*. 2002; 46: 3555-3560.
19. Delgado G, Souza V, Morales R, Cerritos R, Gonza'lez-Gonza'lez A, Mendez JL, et al. Genetic characterization of atypical *Citrobacter freundii*. *Plos One*. 2013; 8(9):e74120.
20. Campbell JM, Crenshaw JD, Polo J. The biological stress of early weaned piglets. *J Anim Sci Biotechnol*. 2013; 4:19.
21. Pluske JR, Turpin DL, Kim JC. Gastrointestinal tract (gut) health in the young pig. *Animal Nutr*. 2018; 4:187-196.
22. Kim HB, Isaacson RE. The pig gut microbial diversity: understanding the pig gut microbial ecology through the next generation high throughput sequencing. *Vet Microbiol*. 2015; 177:242-251.
23. Kim HB, Borewicz K, White BA, Singer RS, Sreevatsan S, Tu ZJ. Longitudinal investigation of the age-related bacterial diversity in the feces of commercial pigs. *Vet Microbiol*. 2011; 153:124-133.
24. Dou S, Gadonna-Widehem P, Rome V, Hamoudi D, Rhazi L, Lakhal L. Characterisation of early-life fecal microbiota in susceptible and healthy pigs to post-weaning diarrhoea. *PLoS One*. 2017; 12: e0169851.
25. Castillo M, Martin-Orue SM, Nofrarias M, Manzanilla EG, Gasa J. Changes in caecal microbiota and mucosal morphology of weaned pigs. *Vet Microbiol*. 2007; 124:239-247.
26. Gresse R, Chaucheyras DF, Fleury MA, Van de Wiele T, Forano E, Blanquet-Diot S. Gut microbiota dysbiosis in postweaning piglets: understanding the keys to health. *Trends Microbiol*. 2017; 25:851-873.
27. Tajima K, Ohmori H, Tohno M, Ohtsu H, Tsukahara T, Aminov R. Segmented filamentous bacteria are a major group in terminal ileum of piglets. *Anaerobe*. 2013; 23:109-111.
28. McCracken BA, Spurlock ME, Roos MA, Zuckermann FA, Gaskins HR. Weaning anorexia may contribute to local inflammation in the piglet small intestine. *J Nutr*. 1999; 129:613-619.
29. Guevarra RB, Jun HL, Sun HL, Min-Jae S, Doo WK, Bit Na K, et al. Piglet gut microbial shifts early in life causes and effects. *Journal of Animal Science and Biotechnology*. 2019; 10:1.
30. Zeng MY, Inohara N, Nunez G. Mechanisms of inflammation-driven bacterial dysbiosis in the gut. *Mucosal Immunol*. 2017; 10:18-26.
31. Winter SE, Winter MG, Xavier MN, Thiennimitr P, Poon V, Keestra AM, et al. Host-derived nitrate boosts growth of E. coli in the inflamed gut. *Science*. 2013; 339:708-711.
32. Drumo R, Pesciaroli M, Ruggeri J, Tarantino M, Chirullo B, Pistoia C, et al. Salmonella enterica Serovar typhimurium exploits inflammation to modify swine intestinal microbiota. *Front Cell Infect Microbiol*. 2015; 5:106.
33. Pollock J, Gally DL, Glendinning L, Tiwari R, Hutchings MR, Houdijk JGM. Analysis of temporal fecal microbiota dynamics in weaner pigs with and without exposure to enterotoxigenic Escherichia coli. *J Anim Sci*. 2018; 96:3777-3790.
34. Arguello H, Estelle J, Zaldivar-Lopez S, Jimenez-Marin A, Carvajal A, LopezBascon MA, et al. Early Salmonella typhimurium infection in pigs disrupts microbiome composition and functionality principally at the ileum mucosa. *Sci Rep*. 2018; 8:7788.
35. Pluske JR. Feed- and feed additives-related aspects of gut health and development in weanling pigs. *J Anim Sci Biotechnol*. 2013; 4:1.
36. Kobayashi M, Sasaki T, Saito N, Tamura K, Suzuki K, et al. Houseflies: not simple mechanical vectors of enterohemorrhagic *Escherichia coli* O157:H7. *Am J Trop Med Hyg*. 1999; 61: 625-629.
37. Tajeddin E, Hasani Z, Ganji L, Gholam MFS, Azimirad M, Torabi P, et al. Shiga toxin-producing bacteria as emerging enteric pathogens associated with outbreaks of foodborne illness in the Islamic Republic of Iran. *East Mediterr Health J*. 2019;25.
38. Herold S, Karch H, Schmidt H. Shiga toxin-encoding bacteriophages-genomes in motion. *Int J Med Microbiol*. 2004;294(2-3):115-121.
39. Schmidt H, Montag M, Bockemühl J, Heesemann J, Karch H. Shiga-like toxin II-related cytotoxins in *Citrobacter freundii* strains from



- humans and beef samples. *Infect Immun.* 1993;61(2):534-543.
40. Bossi L, Fuentes JA, Mora G, Figueroa-Bossi N. Prophage contribution to bacterial population dynamics. *J. Bacteriol.* 2003;185, 6467-6471.
  41. Guarino A, Ralph G, Michael RT. *Citrobacter freundii* produces an 18-amino-acid heat-stable enterotoxin identical to the 18-amino-acid *Escherichia coli* heat-stable enterotoxin (ST Ia). Division of Digestive Diseases, Department of Internal Medicine, University of Cincinnati College of Medicine, Cincinnati, Ohio. 1989; 57(2): 649-652.
  42. Nayar R, Shukla I, Sultan A. Epidemiology, prevalence and identification of *Citrobacter* species in clinical specimens in a tertiary care hospital in India. *International Journal of Scientific and Research Publications.* 2014; 4:4.
  43. Evangelopoulou G, Kritas S, Govaris A, Burriel AR. Pork meat as a potential source of *Salmonella enterica* subsp. *arizonae* infection in humans. *J. Clin. Microbiol.* 2014;52: 741-744.
  44. Friendship RM, Mouchili A, McEwen S, Rajic A. Critical review of on-farm intervention strategies against *Salmonella*. 2009.
  45. Sommer MOA, Dantas G. Antibiotics and the resistant microbiome. *Curr. Opin. Microbiol.* 2011;14: 556-563.
  46. Tiolas A, Bollet C, La Scola B, Raoult D, Pages JM. Successive emergence of *Enterobacter aerogenes* strains resistant to imipenem and colistin in a patient. *Antimicrob. Agents Chemother.* 2005;49: 1354-1358.
  47. Frye FG, Jackson CR. Genetic mechanisms of antimicrobial resistance identified in *Salmonella enterica*, *Escherichia coli*, and *Enterococcus spp.* isolated from U.S. food animals. *Front. Microbiol.* 2013;4: 135.
  48. Putra, A.R. Effendi, M.H. Koesdarto, S. Suwarno, S. Tyasningsih, W. and Estoe pangestie, A.T. Detection of the extended spectrum  $\beta$ -lactamase produced by *Escherichia coli* from dairy cows by using the Vitek-2 method in Tulungagung regency, Indonesia. *Iraqi Journal of Veterinary Sciences*, 2020; 34 (1): 203-207.
  49. Putra ARS, Effendi MH, Koesdarto S, and Tyasningsih W. Molecular Identification of Extended Spectrum Beta-Lactamase (ESBL) Producing *Escherichia coli* Isolated from Dairy Cows in East Java Province, Indonesia. *Indian Vet. J.* 2019; 96 (10): 26 - 30.
  50. Kristianingtyas L, Effendi, MH, Tyasningsih W, Kurniawan F. Genetic Identification of *blactx-M* Gene and *blatem* Gene on Extended Spectrum Beta Lactamase (ESBL) Producing *Escherichia Coli* from Dogs. *Indian Vet. J.* 2020; 97 (01): 17 - 21
  51. Effendi M.H, Harijani N, Budiarto, Triningtya N.P, Tyasningsih W. and Plumeriastuti H. Prevalence of Pathogenic *Escherichia Coli* Isolated from Subclinical Mastitis in East Java Province, Indonesia. *Indian Vet. J.* 2019; 96 (03): 22 - 25
  52. Wibisono FJ, Sumiarto B, Untari T, Effendi MH, Permatasari DA, Witaningrum AM. The Presence of Extended Spectrum Beta-Lactamase (ESBL) Producing *Escherichia coli* On Layer Chicken Farms In Blitar Area, Indonesia. *Biodiversitas.* 2020; 21 (6): 2667-2671.
  53. Wibisono, F.J., Sumiarto, B., Untari, T., Effendi, M.H., Permatasari, D.A., Witaningrum, A.M. CTX Gene of Extended Spectrum Beta-Lactamase (ESBL) Producing *Escherichia coli* on Broilers in Blitar, Indonesia. *Sys Rev Pharm* 2020;11(7): 396-403.
  54. Permatasari, D.A., Witaningrum, A.M., Wibisono, F.J., Effendi, M.H. Detection and prevalence of multidrug-resistant *Klebsiella pneumoniae* strains isolated from poultry farms in Blitar, Indonesia. *Biodiversitas*, 2020; 21 (10): 4642-4647.
  55. Wibisono, F.J., Sumiarto, B., Untari, T., Effendi, M.H., Permatasari, D.A., Witaningrum, A.M. Short Communication: Pattern of antibiotic resistance on extended-spectrum beta-lactamases genes producing *Escherichia coli* on laying hens in Blitar, Indonesia. *Biodiversitas*, 2020; 21 (10): 4631-4635.
  56. Effendi, M.H., Oktavianto, A and Hastutieck, P. Tetracycline Resistance Gene in *Streptococcus Agalactiae* Isolated from Bovine Subclinical Mastitis in Surabaya, Indonesia. *Philipp. Journal of Veterinary Medicine.* 2018; 55 (SI): 115-120.
  57. Tyasningsih, W., Effendi, M. H., Budiarto, B., & Syahputra, I. R. Antibiotic Resistance to *Staphylococcus aureus* and Methicillin Resistant *Staphylococcus aureus* (MRSA) Isolated from Dairy Farms in Surabaya, Indonesia. *Indian Vet. J.* 2019; 96(11), 27-31.
  58. Rahmaniar, R. P., Yunita, M. N., Effendi, M. H., Yanestria, S. M. Encoding Gene for Methicillin Resistant *Staphylococcus aureus* (MRSA) Isolated from Nasal Swab of Dogs. *Indian Vet. J.* 2020; 97(02), 37-40.
  59. Decline, V., Effendi, M. H., Rahmaniar, R. P., Yanestria, S. M., Harijani, N. Profile of antibiotic-resistant and presence of methicillin-resistant *Staphylococcus aureus* from nasal swab of dogs from several animal clinics in Surabaya, Indonesia. *Intl J One Health*, 2020; 6(1), 90-94.
  60. Ramandinianto, S.C., Khairullah, A.R., Effendi, M.H. 2020. *MecA* gene and methicillin-resistant *Staphylococcus aureus* (MRSA) isolated from dairy farms in East Java, Indonesia. *Biodiversitas*, 21(8): 3562-3568.
  61. Yunita, M. N., Effendi, M. H., Rahmaniar, R. P., Arifah, S., Yanestria, S. M. Identification of *Spa* Gene For Strain Typing Of Methicillin Resistant *Staphylococcus aureus* (MRSA) Isolated From Nasal Swab Of Dogs. *Biochem. Cell. Arch.* 2020; 20 (1), 2999-3004.
  62. Harijani, N., Wandari, A., Effendi, M.H. and Tyasningsih, W. Molecular Detection of Encoding Enterotoxin C Gene and Profile of Antibiotic Resistant on *Staphylococcus Aureus* Isolated from Several Dairy Farms in East Java, Indonesia. *Biochem. Cell. Arch.* 2020; 20 (1): 3081-3085.
  63. Effendi, M. H., Bintari, I. G., Aksoro, E. B. and Hermawan. I. P. Detection of *blaTEM* Gene of *Klebsiella pneumoniae* Isolated from swab of food-producing animals in East Java. *Trop. Anim. Sci. J.* 2018; 41:174-178.
  64. Khairullah, AR, Sudjarwo, SA, Effendi, MH, Harijani, N, Tyasningsih, W, Rahmahani, J, Permatasari, DA, Ramandinianto, SC, Widodo, A, Riwu, KHP. A Review of Methicillin-Resistant *Staphylococcus aureus* (MRSA) on Milk and Milk Products: Public Health Importance. *Sys Rev Pharm* 2020;11(8): 59-69.
  65. Ramandinianto, S.C., Khairullah, A.R., Effendi, M.H., Tyasningsih, W. and Rahmahani, J. Detection of Enterotoxin type B gene on Methicillin Resistant *Staphylococcus aureus* (MRSA) isolated from raw



- milk in East Java, Indonesia. *Sys Rev Pharm*, 2020;11(7):290-298.
66. Yanestria, S.M., Rahmaniar, R.P., Wibisono, F.J., Effendi, M.H. Detection of *invA* gene of *Salmonella* from milkfish (*Chanos chanos*) at Sidoarjo wet fish market, Indonesia, using polymerase chain reaction technique, *Veterinary World*, 2019; 12(1): 170-175.
  67. Effendi, MH, Harijani N, Yanestria SM, Hastutiek P. Identification of shiga toxin-producing *Escherichia coli* in raw milk samples from dairy cows in Surabaya, Indonesia. *Philipp. Journal of Veterinary Medicine*. 2018;55(SI):109-114.
  68. Liu Z, Zhigang Z, He Yan, Jianrong Li, Lei Shi. 2014. Isolation and molecular characterization of multidrug-resistant enterobacteriaceae strains from pork and environmental samples in Xiamen, China. *Journal of Food Protection*. 2015; 78:1 78–88.
  69. Gousia P, Economou E, Sakkas H, Leveidiotou S, Papadopoulou C. Antimicrobial resistance of *Citrobacter spp.*, *Enterobacter spp.* and *Klebsiella spp.* strains isolated from meat samples, P555. Abstr. 21st European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), 27th International Congress of Chemotherapy (ICC). European Society of Clinical Microbiology and Infectious Diseases, Basel. 2011
  70. Schwaiger K, Huther S, Ho lzel C, Kampf P, Bauer J. Prevalence of antibiotic resistant Enterobacteriaceae isolated from chicken and pork meat purchased at the slaughterhouse and at retail in Bavaria, Germany. *Int. J. Food Microbiol.* 2012; 154:206–211.