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👤 *Trias Mahmudiono, Qonita Rachmah, Diah Indriani, Triska Susila Nindya, Calista Segalita, Susi Hidayah, Azizah Ajeng Pratiwi, Loh Su Peng*

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Ameliorative Effect Of Thiamine Pyrophosphate Against Cisplatin-Induced Reproductive System Damage Within Male Rats

👤 *Maitham Abd Ali Mnati, Bahir Abdul Razzaq Mshimesh, Mustafa Mohammed Ibraheem, Suzan Yousif Jasim*

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Neutrophil Extracellular Traps in Coronavirus Infection: Interaction Network Analysis

👤 *Amal Bouzid, Asmaa T Uthman, Noor N Al-Rawi, Natheer H Al-Rawi*

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An Observational Study Of Coronavirus (Covid-19) In Iraqi Patients At Al-Shifa Medical Center In Baghdad's Capital, Al-Rusafa

👤 *Saad Abdul Kareem Mohammed, Suha Hussein Ahmed, Ali I. Omran Al- Saadawi, Mohammed Mahmood Mohammed*

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👤 *Huda S. Husni*

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👤 *Hameda Abd Al-Mahdi Ghazi, Rajaa Ali Moheiseen Al-Taei, Hayder Abdul-Amir Makki Al-Hindy*

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The Therapeutic Effect Of Eucalyptus Microtheca Against The Giardiasis Induced Renal Damage In Male Rats

👤 *Abdulrazzaq Mohammed Hammood, Muhannad Shweash, and Hazim Ghazzay*

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✉ *Fikrat M Hassan, Warqaa Y. Salih and Halah H Al-Haideri*

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✉ *Zainab H. Fathi, Jehan A. Mohammad, Marwah H. Mohammed*

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✉ *Shatha M. H. Obaid, Waleed K. Mahdi, Falah H. Hussein, Yahya F. Al-Khefaji*

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✉ *Peni Indrayudha, Indah Gita Cahyani*

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Detecting Mycobacterium Tuberculosis through Bacterioferritin Gene Amplification by Real-Time PCR

✉ *Raed Obaid Saleh, Nagham Maad Hamdi, Rana Kadhim Mohammed.*

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✉ *Ibrahim Mohammed Saeed Hussein, Jalank Hameed Mahmoud, Halala Mohammed Abdulla*

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Acute Coronary Syndrome in Patients with Oncological Diseases

✉ *N.A. Shanazarov, N.K. Seidalin, A.F. Khalirahmanov, G.D. Gattiyatullina, S.V. Zinchenko, K. F. Idrisova*

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Role of Pseudomonas Fluorescens and Organic Matter in Controlling of Potato Black Scurf Disease Caused by Rhizoctonia Solani

All A. Kadhum, Jasim M. Abed and Theyab A. Farhan

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THE ROLE OF THE SUPREME COURT OF THE REPUBLIC OF INDONESIA IN REGULATING E-COURT DURING THE NEW

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Breast Cancer in Patients with Gene Polymorphisms Associated with Metabolic Syndrome

N. K. Seidalin, V. V. Benberin, N. A. Shanazarov, Voshchenkova T. A., Aripzhanova G. O., Zhapparov E. I.

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In Vitro and in Silico Analysis on the Bone Formation Activity of N-Hexane Fraction of Semanggi (Marsilea crenata Presl.)

Agnis Pondineka Ria Aditama, Burhan Ma'arif, Denis Mery Mirza, Hening Laswati, Mangestuti Agil.

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Biochemistry and Molecular Cell Biology of Diabetic Complications


 Athmar Jawad Ahmed, Suhad Rasheed Majeed, Hussein Mohammed Obaid.

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 Petro Boichuk, Vitalij Honcharuk, Olena Redko, Nataliya Dziubyshyna, Olena Vlasiuk, Valentyna Tiuska

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Approval Integrating the Indoor and Outdoor Physical Environments for Enhancing Early Childhoods Toward Their Learning Consonances in The Child Development Centers (CDCs) in Thailand

 Jirawon Tanwattanakul, Juraporn Tangpukde, Nipa Angsupakorn, Toansakul Tony Santiboon

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Asmawati, Besse Khusnul Ayulisa, Bahruddin Thalib, Fajriani, Al'qarama Mahardhika Thalib, Rafikah Hasyim, Nurhayati Natsir

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The Association between Alfacalcidol (1-alpha-hydroxyvitamin D3) and Oxidative Stress in Patients with Type II Diabetic Nephropathy

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Falah Mahdi Dananah, Nagham Yahia Ghaffi, Sami Raheem Al-Katib, Yaaerb saad abduljaleel

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 *Ghassan Sameer Dheerib, Husam Jasim Hussein Banana and Mohammed Abdulameer Rashid Al-Sarray*

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 *Sukhrob Narkulov, Khamida Rustamova, Mavlyuda Khodjaeva, Sherali Massavirov, Ilmira Urazaliev*

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 *Burhanuddin Daeng Pasiga, Nursyamsi Djamiluddin, Fuad Husain Akbar*

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 *Dusmurod Norkulov, Nafosat Zikirova, Nilufar Niyozova, Ulugbek Makhkamov, Inayat Sattarov*

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 *Alfiya I. Beryozkina, Akram A. Fazilov*

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 *Melly Susanti, Suwarni, Sabri, Rikhan Mochamad Aziz, Iman Firmansyah, Mochammad Fahlevi*

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 *Khikmatova I. Nigina, Pakhomova Y. Janna, Ruzieva Kh. Nazira*

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DEVELOPMENT OF INDIGENOUS AGENCY CAPACITY IN DEVELOPING STRATEGIC PARTNERSHIP WITH VILLAGE GOVERNMENT


 *Syafhendry, Khairul Rahman, Rendy Prayuda, Budi Muliando and Panca Setya Prihatin.*

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Portal Hypertension Assessment Spleen using Stiffness Measurements after Successful DAAs Therapy In Chronic-HCV Patients

 *Khaled Elmola, Mohamed Heiza, Ahmed B. Abd El Salam, Basem M. M. Salama*

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Cadmium and Selenium Levels in Blood Smokers of Water Pipe (Hookah) in Baghdad


 *Hiba Yousef Saleh, Ghaidaa Neamah Kadhim, Hadeel Ahmed Hasan*

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Development of an Extended-Release Exenatide Once a Week Depot Formulation

 *Jabar A Faraj, Shaimaa M. Mohammed, Khulood M. Alsaraf, Ihab I. Alkhalifa, Kadum A. Al Shareffi, K. Burton.*

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FOREST AREA MANAGEMENT WITH SPECIAL PURPOSE (KHDTK) UNIVERSITY OF BRAWIJAYA FOREST


 *Harry Susanto, Eko Ganis Sukoharsono, Bambang Hendroyono, Amin Setyo Leksono*

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 *Charanjit Kaur Swaran Singh, Tarsame Singh Masa Singh, Nadiah Yan Abdullah, Sasigaran Moneyam, Mohd Ridhuan Ismail, Eng Tek, Ong, Tanalochumi Karupayah, Kalaiselvi Chenderan, Manesha Kaur Rajendra Singh, Jagvinder Kaur Swaran Singh.*

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Polymerase Chain Reaction Study For Anaplasma Phagocytophilum In Iraqi Cows


 *Basim Kareem Ajeel, Alaa kamil Mahmood.*

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 *Vladimir Yu. Startsev, Gleb V. Kondratiev, Vasyli I. Oriol, Sergey V. Golubev, Vladimir S. Luchkevich*

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The Five Major Factors In the Personality and its Relationship to the Attachment Patterns Among the Students of the College of Law, Prince Mohammad Bin Fahd University, AL-KHOBAR

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Adding Different Concentrations of Pomegranate Peels Alcoholic Extract and its Effect on Characteristics of Awassi Ram Semen Preserved at Cooling


 *Husam Jasim Hussien Banana, Hakem Takleef Abed Alkhazreji, Zainab Adel Mahdi*

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Review Article

Characteristic Abnormalities In Serum Biochemistry In Patients With Breast Cancer

 *Mahde S. Hamad, Entedhar R. Sarhat, Salim J. Khalaf, Thuraia Rifaat Sarhat, Kasim Sakran Abass*

SRP. 2020; 11(11): 1967 - 1971

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.276

Research Article

Influence of Oocyte Collection Techniques on Oocyte Retrieval and Quality from Ovaries of Iraqi Goats (*Capra Hircus*)

✎ *All J. Al-Nuaimi, Hashim M. Al-Rubaei and Fawzea G. Al-Gebouri*

SRP. 2020; 11(11): 1160 - 1163

» Abstract » PDF DOI: 10.31838/srp.2020.11.168

Review Article

Comprehensive Study For Skin Diseases In Primigravid And Multigravid Pregnant Women

✎ *Asma / Afajeel*

SRP. 2020; 11(11): 1972 - 1975

» Abstract » PDF DOI: 10.31838/srp.2020.11.277

Research Article

Quality of Health Services in the Family Planning Program in Donggala Regency, Indonesia

✎ *Sudirman, Rajindra Rajindra, Burhanuddin, Mohamad Andri, Ahmad Yani*

SRP. 2020; 11(11): 1593 - 1599

» Abstract » PDF DOI: 10.31838/srp.2020.11.223

Review Article

Biological potentials of Hymecromone-based derivatives: A systematic review

✎ *Yasser Fakri Mustafa, Noora Thamer Abdulaziz*

SRP. 2020; 11(11): 438 - 452

» Abstract » PDF DOI: 10.31838/srp.2020.11.65

Research Article

Comparison Profile of Quality of Life, Phosphorylated-Tau, and Superoxide Dismutase Plasma in Women Elderly with and without Dementia

✎ *Lisna Anisa Fitriana, Kusnandar Anggadiredja, Irma Darmawati, Lina Anisa Nasution, Linda Amalia, Slamet Rohaedi, Iwan Setiawan, Adang Suherman, I Ketut Adnyana*

SRP. 2020; 11(11): 1600 - 1603

» Abstract » PDF DOI: 10.31838/srp.2020.11.224

Research Article

The Success of Elimination Diet in Indonesian Children with Food Allergy: The Role of Caregiver's Stress, Family Activities, and Coping

✎ *Azwin Mengindra Putera, Irvanto, Margarita Maria Maramis*

SRP. 2020; 11(11): 1604 - 1611

» Abstract » PDF DOI: 10.31838/srp.2020.11.225

Review Article

TELEVISION AND LANGUAGE OF COMMUNICATION

✎ *Ridha Ahida*

SRP. 2020; 11(11): 55 - 62

» Abstract » PDF DOI: 10.31838/srp.2020.11.10

Research Article

Electronic Rumors of the Corona 19 Pandemic and its Impact on Psychological Reassurance in a Sample of the Society of Prince Sattam Bin Abdulaziz University

✎ *Mona AbdeLatif Al-Awad Khairallah, Asmaa Ghurmallah Al-Zahrani*

SRP. 2020; 11(11): 1612 - 1625

» Abstract » PDF DOI: 10.31838/srp.2020.11.226

Research Article

The Effect of 8 Weeks National Academy of Sports Medicine Exercises Training on Posture, Shoulder Pain, and Functional Disability in Male with Upper Cross Syndrome

✎ *Mohammed Challab Idan Almasoodi, Reza Mahdavinejad, Ghollamali Ghasmi*

SRP. 2020; 11(11): 1826 - 1833

» Abstract » PDF DOI: 10.31838/srp.2020.11.256

Review Article

THE RESULTS OF THE RESEARCH OF THE INITIAL STATE OF READINESS OF FUTURE SOCIAL PEDAGOGUES TO WORK IN INCLUSIVE EDUCATION

✎ *al-Farabi KazNU, al-Farabi KazNU, M.Auezov*

SRP. 2020; 11(11): 63 - 70

» Abstract DOI: 10.31838/srp.2020.11.11

Review Article

Phytochemical Investigation Of Some Phenolic Compounds In *Carthamus Tinctorius* That Grown Naturally In Iraq

👤 *Mohammed Abbas Fadhil, Enas Jawad Kadhim*

SRP. 2020; 11(11): 1869 - 1874

» Abstract » PDF DOI: 10.31838/srp.2020.11.262

Review Article

Hydrothermal Synthesis Of γ -MnO₂ Nanostructures With Different Morphologies Using Different Mn²⁺ Precursors

👤 *Zahraa Hasan Raheem, Abdulkareem Mohammed Ali Al-Sammarraie*

SRP. 2020; 11(11): 453 - 458

» Abstract » PDF DOI: 10.31838/srp.2020.11.66

Research Article

A Comparative Study of the Chemical and Biological Control of the Pentodon Bispinifrons Reitter, (Coleoptera: Scarabaeidae)

👤 *Hanadi A. Abdul-Razzaq, Bafreen M. Raza*

SRP. 2020; 11(11): 1626 - 1629

» Abstract » PDF DOI: 10.31838/srp.2020.11.227

Review Article

Factors That Affect the Psychological Aspect of Cultural Conflict Among Vietnamese Youth

👤 *Vu Thu Trang*

SRP. 2020; 11(11): 459 - 463

» Abstract » PDF DOI: 10.31838/srp.2020.11.67

Review Article

Psychological Detection Of Stress And Shbg (Sex Hormone Binding Globulin) In Insulin Resistant Of Polycystic Ovarium Syndrome (Pcos) In Women, Indonesia

👤 *Zakkiyatus Zainiyah, Muhammad Suhron*

SRP. 2020; 11(11): 1875 - 1880

» Abstract » PDF DOI: 10.31838/srp.2020.11.263

Review Article

THE EFFECTIVENESS OF USING ANIMATION ON SCIENCES ACADEMIC ACHIEVEMENT OF THE THIRD GRADE STUDENTS IN AL-JEEZAH DISTRICT SCHOOLS

👤 *Foza Al-Zaben, Manal A. Altawaibeh*

SRP. 2020; 11(11): 71 - 75

» Abstract » PDF DOI: 10.31838/srp.2020.11.12

Research Article

Elicitation of Biosurfactant Production of *Serratia Marcescens* by Using Biotic and Abiotic Factors

👤 *Aida Hussain Ibrahim and Marwa Shaker Mahmood*

SRP. 2020; 11(11): 1630 - 1638

» Abstract » PDF DOI: 10.31838/srp.2020.11.228

Review Article

More Milk More Number of Covid-19? Is that True Milk Can Boost Health of Covid-19 Patient?

👤 *Maslichah Mafruchati*

SRP. 2020; 11(11): 1639 - 1642

» Abstract » PDF DOI: 10.31838/srp.2020.11.229

Review Article

Characterization of Foodborne Pathogens and Enterotoxigenic *Staphylococcus Aureus* Isolates with Detection of Antibiotic Resistance from Beef Meat

👤 *Suad A Al-Hillu, Wisam H Al-Shujairi*

SRP. 2020; 11(11): 464 - 475

» Abstract » PDF DOI: 10.31838/srp.2020.11.68

Research Article

The Effect of Sawdust Extract Injection on the Physical Characteristics of Compacted Soil


👤 *Wathib S S Alnuaymy, Ali M S Alaiusi*

SRP. 2020; 11(11): 1834 - 1843

» Abstract » PDF DOI: 10.31838/srp.2020.11.257

Research Article

Analysis of Risk of Exposure to COVID-19 in Fishermen in Kenjeran

 *Indriati Paskarini, Dani Nasirul Haqi, Shintia Yunita Arini, Endang Dwiyantri, Putri Ayuni Alayyannur*

SRP. 2020; 11(11): 1643 - 1648

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.230

Review Article

CONTRIBUTIONS OF TECHNOLOGY, CULTURE, AND ATTITUDE TO ENGLISH LEARNING MOTIVATION DURING COVID -19 OUTBREAKS


 *Kaharuddin, Djuwainiah Ahmad, Mardiana, Rusni.*

SRP. 2020; 11(11): 76 - 84

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.13

Research Article

The Reproductive Susceptibility of Tomato Fruit Worm *Heliothis Armigera* (Hubner). (Lepidoptera: Phalaenidae) at a Different Temperatures and Hosts Plants


 *Meeri Kadhim Mubasher Al-Fatlawi, Alaa Hussin Abed, Mohammed sahib abed, Ahmed A. Al nuaimy*

SRP. 2020; 11(11): 1164 - 1170

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.169

Review Article

How Does Team Performance Management Influence The Knowledge In Implementing Patient Safety Programs In Hospital Work Unit, Indonesia?

 *Mirrah samiyah, Usman Hadi, Widodo J. Pudjiraharjo, Nyoman Anita Damayanti, Djazuly Chalidyanto, ThinniNurul Rochmah.*

SRP. 2020; 11(11): 1881 - 1885

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.264

Research Article

Effect of Supplementing Betaine on Productive Performance of Broiler Chickens Fed Diets Containing Different Levels of Choline

 *Sanaa A. M. AL-Hameed, Abbas. S.H. AL-Machi and Jassim K.M. Al-Gharawi*

SRP. 2020; 11(11): 1649 - 1653

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.231

Review Article

Stress Family Experience And Profiles Of Tumor Necrosis Factor Alpha And Interleukin-10 Of Nuaulu Tribe Community With Hunting Activity In Mesoendemic Area Of Malaria

 *Nur Baharia Marasabessy, Muhammad Suhron*

SRP. 2020; 11(11): 1886 - 1891

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.265

Review Article

Role of Hyaluronic Acid In Modulating Wound Healing Progression

 *Maha Adil Hameed, Majid Kadhim Abbas, Kaiser N. Madium*

SRP. 2020; 11(11): 1844 - 1850

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.258

Research Article

A Comparison between Anteroposterior Colporrhaphy and Erbium YAG Laser Interventions in the Treatment of Postpartum Stress Urinary Incontinence: Promising Win for the Erbium YAG laser


 *Taghreed Salah Alquzwini*

SRP. 2020; 11(11): 476 - 481

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.69

Review Article

Does Contraception Used Better In Urban Areas ? : An Analysis Of The 2017 Idhs (Indonesia Demographic And Health Survey)


 *Agustina Abuk Seran, Agung Agung Laksono, Anita Dewi Prahastuti Sujoso, Masrurroh, Ilyas Ibrahim, Nurmah Baharia Marasabessy, Nikmatur-Roharia, Nasrun Pakaya, Retno adriyani*

SRP. 2020; 11(11): 1892 - 1897

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.266

Research Article

Effect of Silymarin and/or Bone Marrow-Derived Mesenchymal Stem Cells on Carbon Tetrachloride-Induced Hepatotoxicity in Rats

 *Tariq I Almundarij, Abdel Kader A Zaki, Yousef M. Alharbi, Saleh M. Albarrak, Tamim S Alqarawi and Faten A M Abo-Aziza*

SRP. 2020; 11(11): 1654 - 1665

Review Article

CROSS LEVEL ANALYSIS OF ORGANIZATIONAL JUSTICE CLIMATE TO COUNTERPRODUCTIVE WORK BEHAVIOR: LEADER-MEMBER EXCHANGE AS MEDIATION

Yuni Siswanti, Heru Kurnianto Tjahjono, Arif Hartono, Wisnu Prajogo

SRP. 2020; 11(11): 85 - 94

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.14

Research Article

Effect of Oxytocin Injection on Some Biochemical Parameters and Morphological of Some Organs Trails in Holstein Crossbreed Cows

Khafaf A. H. Al-Rishdy, Waleed Y. Kassim and Murthda F. AL-Hellou

SRP. 2020; 11(11): 1171 - 1176

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.170

Review Article

Medication safety issues in Four Lower Middle-Income Countries of Northern and Eastern Africa: Challenges and Recommendations

Mansour Adem Mahmoud, Alnada Abdalla Mohamed Ibrahim, Sultan O Alolayan

SRP. 2020; 11(11): 482 - 486

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.70

Review Article

Effect Of Evisect On Organo-Somatic Index And Pathohistological Changes Of Some Vital Organs In White Mice.

Radhiah Najm Abd, and Azhar Lateef Jebur

SRP. 2020; 11(11): 1910 - 1914

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.268

Review Article

THE INFLUENCE OF BRAND SATISFACTION, BRAND TRUST, BRAND PREFERENCE ON BRAND LOYALTY TO LAPTOP BRANDS

Dam Tri Cuong

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

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.15

Research Article

What Factors that Cause the High Numbers of Unwanted Pregnancy in Indonesia?

Muthmainnah, Indah Lutfiya, Mursyidul Ibad, Afif Kurniawan, Nuke Amalia, Diyah Herowati, Lutfi Agus Salim, Diah Puspita Sari, Chairunnisa Murniati

SRP. 2020; 11(11): 1666 - 1671

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.233

Review Article

Study Of Removing Of The Hexavalent Chromium Ion From Aqueous Solutions Using Coal And Ficus Modified

Marwa Sabbar Falih, Suhair Abdulhadi Mahdi, Mudeer Mubarak Merza

SRP. 2020; 11(11): 1915 - 1924

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.269

Review Article

Fabrication and Evaluation of Oral Multi-Particulate Tablets of Proton Pump Inhibitors: Esomeprazole as a Model

Radhwan N. Al-Zidan, Saad M. Majeed, and Mohammed K. Al-Shaheen

SRP. 2020; 11(11): 487 - 492

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.71

Research Article

The Role and Significance of Tools of Decentralization of the Healthcare System in Ukraine and the Republic of Poland: Medical and Legal Analysis

Olena Artemenko, Lubov Krupnova, I& 1110;udmyla Kurylo, Svitlana Kovalova, Liliia Kniazka.

SRP. 2020; 11(11): 1925 - 1929

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.270

Research Article

The Influence of Job Satisfaction on Patient Safety Culture in Makassar Hospitals


Pasirringi A. Syahrir, Rivai Fridawati, Irwandy, Sari, Nurmala

SRP. 2020; 11(11): 1851 - 1855

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.259

Review Article

**RELIGIOUS CHARACTER TEACHING AND LEARNING MODEL TO PREVENT
RADICALISM IN UNIVERSITIES**


 Tobroni, Nur Chanifah, Saiful Akhyar Lubis

SRP. 2020; 11(11): 102 - 111

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.16

Review Article

Hesperidin improves fertility in female mice infected by *Brucella melitensis*

 I Awni, K.J., Rajaa, S. Abbas, Ziad Tareq Neman

SRP. 2020; 11(11): 112 - 116

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.17

Research Article

Anatomical and Palynological Studies of Some *Bougainvillea Glabra* Cultivars

 Chnar Najmaddin, Mosleh M. Saeed

SRP. 2020; 11(11): 1177 - 1191

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.171

Review Article

**The Safety of Herbal Used for Health Complaints during Pregnancy ? A Systematic
Review**


 Zulfa Nurfitri Ramadhani, Maftuchah Rochmanti, Pungky Mulawardhana

SRP. 2020; 11(11): 1930 - 1939

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.271

Review Article

Effect of Obesity on Left Ventricular Mass and Diastolic Function


** Baqer Abdulameer Hassan, Falah Abdulhasan Deli, Asaad Hasan Noaman, Salam Jasim
Mohammed**

SRP. 2020; 11(11): 493 - 506

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.12.72

Research Article

**Response of Some Maize Hybrids to Foliar Spraying Treatments 1-Growth
Characteristics**


** Muaiad H.I. Al- Ani, Omar I. M. Al-Dulaimi, Ghazwan H. T. Mahmood, Ahmed R. M. Al-Rawi,
Saleh E. Seadh**

SRP. 2020; 11(11): 1672 - 1676

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.234

Review Article

SIRTUIN 1, a novel approach in the treatment of type 2 diabetes mellitus

 Rusul Ahmed Tariq, Inam Sameh Arif, Basma Talib Al-Sudani

SRP. 2020; 11(11): 117 - 128

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.18

Review Article

Shape and Size Effect of Surface Plasmons on Gold Nanoparticles

 Ahmed M. K. Al bayati, Rafea. A. Muneef, Raad M.S. Al haddad

SRP. 2020; 11(11): 507 - 514

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.73

Research Article

**Expression of HLA-DR, GM-CSF, CD38, and IFN- γ CD4 Lymphocytes Isolated from
Patients Pre- and Post-intensive Phase of Tuberculosis Treatment**


 Herry Priyanto, Muhammad Amin, Jusak Nugraha, Paul Edward Hutchinson

SRP. 2020; 11(11): 1677 - 1682

[» Abstract](#) DOI: 10.31838/srp.2020.11.235

Review Article

**Study The Effect Of Chemerin Level In Type II Diabetic Patients With And Without
Retinopathy**

 Noor T. Tahir, Israa Q. Falih, Faten Khudhair AL_Husaini, Sali Abed Zeghair

SRP. 2020; 11(11): 1856 - 1863

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.260

Review Article

Assessment of Faculty Students' Awareness about Pediculosis? in Najaf Province, Iraq

Malak Majid Al-musawi, Kifah Fadhil Hasson Al-shabaa, Widad Hashim Yahya Al-muhana.

SRP. 2020; 11(11): 129 - 134

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.19

Research Article

Bioanalytical Method Validation of Acrylamide and Glycidamide in Dried Blood Spot Using Ultra High Performance Liquid Chromatography Tandem Mass Spectrometry

Yahdiana Harahap, Amiral Hafidz, and Fadlina Chany Saputri

SRP. 2020; 11(11): 1192 - 1198

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.172

Research Article

In Vitro Antimicrobial Activity of Aqueous, Ethanolic and Methanolic Leaves Extracts from *Salvia argentea*

Yasmina Benabdesslem, Kadda Hachem

SRP. 2020; 11(11): 1683 - 1691

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.236

Review Article

An Integrative Review of Discharge Planning Interventions with Thai Stroke Patients

Wanich Suksatan, Vachira Posai

SRP. 2020; 11(11): 1692 - 1700

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.237

Review Article

Learning Style Role in Varieties of Blended Learning

Hamonangan Tambunan, Marsangkap Silitonga, Uli Basa Sidabutar.

SRP. 2020; 11(11): 135 - 142

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.20

Research Article

Sustainable Budget Planning In Green Campus Implementation at Universitas Muhammadiyah Riau

Bakaruddin, Agus Irianto, Idris, Hasdi Aimon, M. Yahya

SRP. 2020; 11(11): 1701 - 1705

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.238

Review Article

Study of Some Hematological, and Biochemical Parameters in Patients with SARS-CoV-2 in Kirkuk City/Iraq

Abdulla Kamil Abdulla, Omar A Salman, Ahlam Ahmed Mahmood

SRP. 2020; 11(11): 515 - 522

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.12.74

Research Article

Comparative Study Depending on Immune and Body Status with Anemia in Sheep

Inam A. Nayyef

SRP. 2020; 11(11): 1706 - 1709

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.239

Review Article

Trace Elements Levels In Iraqi Immunocompetent Patients With Toxoplasmosis

Maysoon Abdul-zahra Merdaw, Najwan Kaiser Fakree, Hala Hussain Hadi, Shahad Wisam Ahmed, Sonia Emad Naser

SRP. 2020; 11(11): 1864 - 1868

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.261

Review Article

The Effect of Work Discipline and Compensation on Employee Performance in the Government Office

✎ *Maya Rezeki Angriani, Anis Eliyana*

SRP. 2020; 11(11): 1710 - 1714

» Abstract » PDF DOI: 10.31838/srp.2020.11.240

Review Article

The Effect of Transformational Leadership on Employee Performance Mediated by Leader-Member Exchange (LMX)

✎ *Fatin Fadhilah Hasib, Anis Eliyana, Zainal Arief, Anisa Army Pratiwi*

SRP. 2020; 11(11): 1199 - 1209

» Abstract » PDF DOI: 10.31838/srp.2020.11.173

Review Article

The Selection of Environmentally Friendly Wood for Raw Materials in the Creative Industries

✎ *Sushardi, Adi Ruswanto, Sri Gunawan, Idum Sattia Santi, Mohamed Nor Azhari Azman, Nuraeni Dwi Dharmawati, Bambang Heri Isnawan*

SRP. 2020; 11(11): 523 - 528

» Abstract » PDF DOI: 10.31838/srp.2020.11.75

Review Article

The Effect of Safety-Specific Transformational Leadership and Safety-Specific Passive Leadership on Safety Behaviors Mediated by Safety Climate

✎ *Zainal Arief, Anis Eliyana, Rachmawati Dewi Anggraini, Putri Atika Sari*

SRP. 2020; 11(11): 1715 - 1726

» Abstract » PDF DOI: 10.31838/srp.2020.11.241

Review Article

The Impact of Toll Roads Development: Ecology of Public Administration Perspective

✎ *Mukarto Siswoyo.*

SRP. 2020; 11(11): 152 - 157

» Abstract » PDF DOI: 10.31838/srp.2020.11.22

Review Article

Analytical Hierarchy Process (Ahp) In Manufacturing And Non-Manufacturing Industries: A Systematic Literature Review

✎ *Haryadi Sarjono, Oranis Seik, Juliasco Defan and Bachtar H. Simamora.*

SRP. 2020; 11(11): 158 - 170

» Abstract » PDF DOI: 10.31838/srp.2020.11.23

Review Article

Comparison Production and Reproduction Performance of Muscovy Duck from Different Regions

✎ *Dini Widianingrum, Tutu Widjastuti, Asep Anang, Iwan Setiawan*

SRP. 2020; 11(11): 527 - 533

» Abstract » PDF DOI: 10.31838/srp.2020.12.85

Review Article

A Review of Antimicrobial Resistance (AMR) of Escherichia coli on Livestock and Animal Products: Public Health Importance

✎ *Hayyun Durrotul Faridah, Erna Kristiana Dewi, Fatimah, Mustofa Helmi Effendi, Hani Plumeriastuti*

SRP. 2020; 11(11): 1210 - 1218

» Abstract » PDF DOI: 10.31838/srp.2020.11.174

Review Article

How to Optimize Surgical Treatment of Chronic Anal Fissure Combined With Rectocele In Women

✎ *V.F. Kulik & 1086;vsky, N.V. & 1054;leynik, A.P. Kriv & 1089;hik & 1086;va, M.S. Aleni & 1089;heva, Yarosh A.L..*

SRP. 2020; 11(11): 171 - 176

» Abstract » PDF DOI: 10.31838/srp.2020.11.24

Review Article

Current State and Perspectives of Criminalization of Violations of Labor Rights in the New Criminal Code of Ukraine

✎ *Tetiana Zanfirova, Anzhela Aidynian, Yurii Pokhodziilo, Iryna Kravchuk, Hlib Rybalko*

SRP. 2020; 11(11): 529 - 532

» Abstract » PDF DOI: 10.31838/srp.2020.11.76

Review Article

Synergistic and antimicrobial effects of leaves oil (phoenix dactylifera) agonist gram negative bacteria

✎ *Shatha Mousa miaghee Al-safi, Kefah fadhil hasson Al-Shabaa, Saadia S. Mehdy AL-Zeiny, Aliman Mohammed Baqir Al-Dhalimy.*

SRP. 2020; 11(11): 177 - 181

» Abstract » PDF DOI: 10.31838/srp.2020.11.25

[Review Article](#)

Legal Nature of Invalid Transactions

 *Ofeksil Zaitsev, Volodymyr Kroitor, Arsen Isafev, Marianna Bilenko, Arina Savchenko*

SRP. 2020; 11(11): 533 - 536

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.77

[Review Article](#)

The differences of T2RS expression as a sensitivity marker of bitter taste on consumed coffee


 *Intan Nadzirah, Ari Triwardhani, Hans Lesmana, Aqsa Syuhada Okky, Hendrik Setia Budi, Jenny Sunariani.*

SRP. 2020; 11(11): 182 - 185

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.26

[Research Article](#)

Histopathological Studies on Leucocytozoon Caulleryi Infection on Broiler in Endemic Area of Indonesia

 *Endang Suprihati, Kusnoto Kusnoto, Nurdianto Triakoso, Wiwik Misaco Yuniarti*

SRP. 2020; 11(11): 1219 - 1223

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.175

[Review Article](#)

Exploring Indonesian Midwife's Experience of Preeclampsia Screening and Community Health Volunteer's Role to Prevent Maternal and Fetal Complications: A Qualitative Study at the Community Level


 *Johariyah, Widayawati, Nurdlati DS.*

SRP. 2020; 11(11): 186 - 193

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.27

[Review Article](#)

Health Promotion Model Of Parent Caretaking Pattern Through Integrative Holistic Early Age Children Education


 *Tri Sunarsih, Djauhari Ismail, Endah Puji Astuti, Elvika Fit Ari Shanti.*

SRP. 2020; 11(11): 194 - 202

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.28

[Review Article](#)

Leaders' Change Promoting Behaviors, Leader Charisma, And Commitment to Change as the Antecedent of Employee Performance


 *Ferdic Sukma Wahyudin, Anis Eliyana, Agung Dharmawan Buchdadi, Wahyu Saputra*

SRP. 2020; 11(11): 1224 - 1233

[» Abstract](#) [» PDF](#) DOI: doi: 10.31838/srp.2020.11.176

[Review Article](#)

New Trichoderma harzianum Rifai F-180 - L-lysine--oxidase antitumor enzyme producer - culture liquid-based substance biotechnology

 *I.P. Smirnova, I.V. Podoprigora, V.I. Kuznetsov, T.I. Mansur, G.I. Miandina, N.V. Iashina*

SRP. 2020; 11(11): 203 - 207

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.29

[Review Article](#)

Effects of Coconut oil and fusidic acid extract in alternative traumatic wound healing in RATS model


 *Hassan H.K. AL Bayati, Firas A. Husseinb, Idris K. Thamer, Buthina A. Abdullahid.*

SRP. 2020; 11(11): 208 - 213

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.30

[Review Article](#)

Comparison of The Effects Of Deferasirox And Deferoxamine On Uric Acid And Renal Function In Patients with Beta Thalassemia

 *Zaina A. Althanoon, Nash A. Alkazzaz.*

SRP. 2020; 11(11): 214 - 222

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.31

[Review Article](#)

Effects of Sleep Quality Towards Blood Glucose Levels As At Type II Diabetes Mellitus Patients


 *Janu Purwono, Ludiana, Nury Lutfiatil Fitri, Uswatun Hasanah, Sapti Ayubbana*

SRP. 2020; 11(11): 223 - 226

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.32

[Research Article](#)

The Effect of Participatory Leadership on Performance through Psychological Empowerment and Trust-in-Supervisors

 *Helmi Buyung Aulia Sefrizal, Anis Eliyana, Muhammad Firdaus, Pinky Dwi Rachmawati*

SRP. 2020; 11(11): 1234 - 1246

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.177

[Research Article](#)

Effect of Curcumin on sFlt-1 and PlGF Concentration in Preeclampsia Induced HUVEC Cell Line

 *Cut Meurah Yeni, Prima Nanda Fauziah, Ani Melani Maskoen, Rovina Ruslami, Johannes Mose*

SRP. 2020; 11(11): 1247 - 1251

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.178

Review Article

Double-Blind Placebo-Controlled Effectiveness of Cholecalciferol (Vitamin D3) Plus Magnesium and Zinc in Management of Type 1 Diabetes (T1d) In Pediatric Age Group

Luay Farhood Jumaah, Baha D. Moohy Alosy, Hind Mutar Ibrahim, Emad Maaroof Thskir

SRP. 2020; 11(11): 543 - 548

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.79

Review Article

Protocol for a Systematic Review and Meta-Analysis on Randomized Clinical Trials on the Efficacy and Safety of Sphingosine-1-Phosphatase Receptor Modulators

Asim Ahmed Elnour, Adel Sadeq, Farah Hamad Farah, Noor Alhouda Kassem, Haia Abdulsamad, N Al Mazrouei, Israa Yousif Khidir, Doaa Nassar, Abubakar B. Abubakar, Abdelgadir Elamin, Abdulla Al Amoodi, Sasha Mohammed Elamin Suliman, Mohamed Elamin Hassan, Noora Alhajri, Ekrima Elmoeiz Gaffar Osman, Salma Mohamed Magboul, Judit Don; Jamila Alaryani, Islam Moahmmmed Abd Alla, Warda Salah Mohammed Elkhaliifa, Nadeen T Ali, Hanan Siddig Ali Alamin, Hagar Awad Abdelrahim, Sahar Asim Ahmed Elnour, Asil Adel, Wadah Mohamed Ali Khogali, Haya Hamed Ahmed Lulu

SRP. 2020; 11(11): 1253 - 1262

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.179

Review Article

Maternal Characteristics and Perinatal Outcomes in Women with Severe Preeclampsia

Cipta Pramana, Kartika Budi Peranaivengrum, Velisa Juliani, Citramas Laras, Ni Nyoman Harini Luxzi, Agus Supinganto, Nur Aini Staryo, Nurhidayah, Kholis Ernavati, Selasih Putri Isnawati Hadi, Giri Respati

SRP. 2020; 11(11): 549 - 553

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.80

Review Article

COPING STRATEGIES POTENTIALLY REDUCE BURNOUT SYNDROME IN ANESTHESIOLOGISTS

Kusuma Devi Sugiharto, Hartono, Purwoko, Ari Probandari

SRP. 2020; 11(11): 554 - 558

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.81

Review Article

The Effect of Transactional and Transformational Leadership on Lecturer Performance with Job Satisfaction as the Mediation

Maya Rezeki Angriani, Anis Eliyana, Hastirullah Fitrah, Priyo Sembodo

SRP. 2020; 11(11): 1263 - 1272

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.180

Review Article

Does Pain Catastrophizing among Pregnant Women affect their beliefs about Epidural Analgesia

Manal Kassaba, Ala' A Alhowary, Shereen Hamadneh, Ahmad Smadi, Hadeel Malaabeh, Anit N Roy

SRP. 2020; 11(11): 559 - 563

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.82

Review Article

The Role of Job Insecurity Mediation on The Effect of Workplace Bullying on Work Engagement and Health Problems

Ratih Indriyani, Anis Eliyana, Juniati Panjaitan

SRP. 2020; 11(11): 1273 - 1281

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.181

Review Article

A Development of Adjustable Standing and Automatic Stop Electric Wheelchair Prototype Operated with A Smartphone

Nutdanai Singkhlee-won, Teeravit Asawasilapakul.

SRP. 2020; 11(11): 571 - 578

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.83

Review Article

Effect of Workplace Spirituality on Pro-Environmental Behaviour Mediated by Environmental Passion

Murpin Josua Sembiring, Anis Eliyana, Lara Santi Wibawa Ningrum

SRP. 2020; 11(11): 1282 - 1290

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.182

Review Article

Topical Indocyanine Green Nanosystem For Photodynamic Therapy of Cutaneous Warts


Nevien Samy, Maha Fadel, Doaa Abdelfadeel, Mohammed Al-Daraji

SRP. 2020; 11(11): 571 - 578

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.84

Review Article

Effect of Employee Engagement on Non-Financial Performance in Jordanian Insurance Companies


 Abdallah Abdallah, Marsaa Haaj Ahmad

SRP. 2020; 11(11): 579 - 590

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.85

Review Article

Funny Moments of Friendship Lead to Medicine Brand Recall Recommendation (Evidence in Indonesian Humor)

 Lissa Rosdiana Noer, Syaifurrizal Wijaya Putra, Sri Hartini

SRP. 2020; 11(11): 1298 - 1308

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.184

Review Article

A Study of The Effect of Aqueous and Alcoholic Extract of Saliva on The Reduction of Induced Hepatotoxicity in Laboratory Animals with Carbon Tetrachloride CCL4

 Nuha Ali Hadi, Rabeah T.Mahmood.

SRP. 2020; 11(11): 591 - 595

[» Abstract](#) DOI: 10.31838/srp.2020.11.86

Review Article

Features of the Advanced Vocational Training of Medical Workers under Modern Conditions

 Alina Maksymenko, Oksana Domina, Zhanna Davydova, Elvira Stupina

SRP. 2020; 11(11): 1309 - 1315

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.185

Review Article

Biochemical Effects of Anti-Diabetic Therapies on Obesity and Insulin Resistance Induced by Monosodium Glutamate in Male Rats

 Sherin M. Khodier, Ibrahim A. Ibrahim, Sherif Y. Saleh, Marwa A. El-Beltagy.

SRP. 2020; 11(11): 227 - 236

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.33

Review Article

A Study of The Effect of Aqueous and Alcoholic Extract of Saliva on The Reduction of Induced Hepatotoxicity in

 Nuha Ali Hadi, Rabeah T.Mahmood.

SRP. 2020; 11(11): 591 - 595

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.86

Review Article

Formulation and Optimization of Lyophilized Selexipag Nanocrystals to Improve the Saturation Solubility and Dissolution Rate

 Rusul M. Alwan, Nawal A. Raja, Areef W. Alhaglesa

SRP. 2020; 11(11): 596 - 605

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.87

Review Article

Modern Types of Psychological Correction and their Practical Application


 Olha Lazorko, Victoria Overchuk, Mykhailo Zhylin, Kseniia Bereziak, Iryna Savelchuk

SRP. 2020; 11(11): 1316 - 1322

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.186

Review Article

How maternal and neonatal services at the community level during the COVID-19 pandemic in Indonesia?

 Johariyah, Detty Siti Nurdiani Zubaedah, Widayawati, Sumarti EndahPurnamaningsih, Maria Margaretha.

SRP. 2020; 11(11): 237 - 242

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.34

Review Article

Reoccurrence of Old-World Screwworm in Coexisting with First Record of Lumpy Skin Disease in Cattle in Babel /Iraq: Clinical and Therapeutic Trial

 Ayad N.D. Alhakim, Ahmed Kassem, Ibrheem Eryan Ibrhim

SRP. 2020; 11(11): 606 - 608

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.88

Review Article

Changes in the Pharmaceutical Market in Terms of COVID-19


 Viktor Lukianchuk, Yevheniia Redkina, Halyna Prozorova, Larysa Vysotska, Tatyana Ilnatova

SRP. 2020; 11(11): 1323 - 1327

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.187

Review Article

Antidiabetic effect of the virgin coconut oil and the virgin coconut oil emulsions


 *Rahmawati, Lastri Wiyani, Andi Aladin, Bayu Putra, Muliani.*

SRP. 2020; 11(11): 243 - 246

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.35

Review Article

Virulence and Antimicrobial Resistance Genes of E. Coli Isolated from Diarrheic Sheep in The North-West Coast of Egypt

 *Amani A. Hafez*

SRP. 2020; 11(11): 609 - 617

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.89

Review Article

Effect of Equisetum Arvense Phenolic Extract in Treatment of Entamoeba Histolytica Infection

 *Torken Ahmed Hama Hasan, Zainb Sulaiman Erzaig, Thabet Mudheher Khalaf, Mohammed Ahmed Mustafa.*

SRP. 2020; 11(11): 618 - 620

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.90

Review Article

Grafted Hyaluronic Acid Nanogel for the Incorporation of Poly(I:C) as an Immunostimulatory Adjuvant

 *Nararat Kotcharat, Penpimol Charoenkanburkang, Jittima Amie Luckanagul.*

SRP. 2020; 11(11): 247 - 253

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.36

Review Article

Transformation of the Social and Medical Spheres under the Conditions of COVID-19

 *Anastasiia Barzylowych, Yuliia Oliinyk, Iryna Kostitska, Nataliia Shakhman Zoriana Buryk.*

SRP. 2020; 11(11): 1328 - 1337

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.188

Review Article

Peculiar Properties of Pregnancy and Childbirth in Women with Gestational Diabetes Mellitus Depending on Body Weight


 *Orazmuradov A.A., Papyshva O.V., Soyunov M.A., Bekbaeva I.V., Arakeiyev G.A., Haddad Kh., Lopatin A.M., Kyrtikov S.I., Zokirova N.M., Mukovnikova E.V.*

SRP. 2020; 11(11): 1338 - 1340

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.189

Review Article

Identification of Moniezia, Sp in Goat Intestines in Indonesia which Can Impede Goat Productivity

 *Maslichah Mafruchati*

SRP. 2020; 11(11): 1341 - 1345

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.190

Review Article

An Insight Into Pyrazolo scaffold as anticancer


 *Mazin A.A. Najm, Khulood H. Oudah, Wassan Nori Mohammed Hassan and Ali B. Roomi.*

SRP. 2020; 11(11): 254 - 263

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.37

Review Article

Protective effect of adsorbent complex on morphofunctional state of liver during chicken polymycotoxicosis


 *Evgenya Yu. Tarasova, Lilia E. Matrosova, Svetlana A. Tanaseva, Nailiya N. Mishina, Ramziya M. Potekhina, Olga K. Ermoiaeva, Sergey Yu. Smolentsev2, Anna M. Tremasova1, Ilnur R. Kadikov, Vladislav I. Egorov, Rashid M. Aslanov, Eduard I. Semenov.*

SRP. 2020; 11(11): 264 - 268

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.38

Review Article

The Effect Of Compress Therapy With Yellow Ginger Ginger (Zingiber Officinale) On The Reduction Of Pain Intensity In Elderly Suffering With Gout Arthritis


 *Rita Sari, Yosi Handayani, Nurwinda Saputri, Rani Ardina, Herna Nurul Atika*

SRP. 2020; 11(11): 269 - 272

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.39

Review Article

Moniezia, Sp is found inside Cow Intestines Slowing down the Growth of the Cattle


 *Maslichah Mafruchati*

SRP. 2020; 11(11): 1346 - 1350

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.191

Review Article

The use of ferrous succinate in combination with vitamins A and E for the prevention of toxic liver dystrophy in piglets

 *Sergey Yu. Smolentsev, Andrey V. Onegov, Lyudmila V. Holodova, Alexey L. Rozhentsov, Evgeny V. Mikhalev, Eduard I. Semenov, Lilia E. Matrosova, Vladislav I. Egorov, Gulnara G. Galyautdinova, Anna M. Tremasova, Gulnaz Sh. Zakirova, Ilnur R. Kadikov, Nailiya N. Mishina.*

SRP. 2020; 11(11): 273 - 280

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.40

Review Article

Protective Impact of Vitamin C Against Some Fetal and Neonatal Congenital Malformations and Anti-Inflammatory Non-Steroidal ?Induced Hepatotoxicity of White Rats

👤 *Dalal Abdel-Hussein Kadhim AL Essawi, Ashwaq K. Abed, Wadad Yahya Hashem, Assef Said Ismaai Alhadad, Zainb Majid Mohammd*

SRP. 2020; 11(11): 621 - 631

» Abstract » PDF DOI: 10.31838/srp.2020.11.91

Review Article

Virus-Reproducing Ability of Growth Media Containing Immunogenesis Mediators

👤 *Edie M. Plotnikova, Irina A. Nesterova, Ramzi N. Nizamov, Zoya G. Churina, Andrey I. Samsonov, Elena L. Matveeva, Gennady N. Spiridonov, Aidar F. Makhmutov, Konstantin N. Vagin, Ruslan R. Gainullin*

SRP. 2020; 11(11): 281 - 284

» Abstract » PDF DOI: 10.31838/srp.2020.11.41

Review Article

Effect of Servant, Digital and Green Leadership toward Business Performance: Evidence from Indonesian Manufacturing

👤 *Milawati Lusiani, Zaenal Abidin, Dwi Fitrianiingsih, Erny Yusnita, Djaka Adiwinata, Dini Rachmaniah, Mukhlisin, Anis Fauzi, Agus Purwanto*

SRP. 2020; 11(11): 1351 - 1361

» Abstract » PDF DOI: 10.31838/srp.2020.11.192

Review Article

Revealing A Traditional Nutritious Cuisine Mangholat, An SFL Approach (A Case Study of Angkola Language Transitivity in Cooking Verb)

👤 *Husniah Ramadhani Pulungan, Riyadi Santosa, Djatmika Djatmika, Tri Wiratno*

SRP. 2020; 11(11): 632 - 642

» Abstract » PDF DOI: 10.31838/srp.2020.11.92

Review Article

Screening the frequency of panton-valentine leukocidin (pvl) gene between methicillin resistant Staphylococcus aureus isolated from diabetic foot patients in Al-Basrah governorate, south of Iraq

👤 *Tahrir H. Gadban, Saad S. Al-Amara, Hanadi A. Jasim*

SRP. 2020; 11(11): 285 - 290

» Abstract » PDF DOI: 10.31838/srp.2020.11.42

Review Article

A Systematic Review Protocol of the Antiviral Activity of Chloroquine and Hydroxychloroquine against COVID-19

👤 *Kofi Boamah Mensah, Adwoa Bemah Boamah Mensah, Joseph Attakorah, Varsha Bangalore, Frasia Oosthuizen*

SRP. 2020; 11(11): 1362 - 1365

» Abstract » PDF DOI: 10.31838/srp.2020.11.193

Review Article

Combined Fractional Erbuim-YAG Laser With Botulinum Toxin-A Versus Botulinum Toxin-A Alone For The Treatment Of Hypertrophic Scars And Keloids

👤 *Self-Allah Mohamed Elfiky, Hisham Shokeir, Mahmoud S Elbasiouny, Nevien Samy*

SRP. 2020; 11(11): 1976 - 1981

» Abstract » PDF DOI: 10.31838/srp.2021.3.20

Review Article

Comparative Study Between Dexmedetomidine and Dexamethasone as Adjuvants to Bupivacaine In Supraclavicular Brachial Plexus Block

👤 *Basim Herez Ali, Mohamed Fadhil Hussain, Raad Jasim Isa*

SRP. 2020; 11(11): 643 - 649

» Abstract » PDF DOI: 10.31838/srp.2020.11.93

Review Report

Overview of The Pharmacy Management System in a Hospital

👤 *Mahyuddin K. M. Nasution, Shahrul Azman Mohd Noah, Urip Harahap*

SRP. 2020; 11(11): 650 - 655

» Abstract » PDF DOI: 10.31838/srp.2020.11.94

Review Article

PARAPHRASING TECHNIQUE TO DEVELOP SKILL FOR ENGLISH WRITING AMONG INDONESIAN COLLEGE STUDENTS OF ENGLISH

👤 *Ismail, Abdul Haris Sunubi, Ali Halidin, Amzah, Nanning, Kaharuddin*

SRP. 2020; 11(11): 291 - 297

» Abstract » PDF DOI: 10.31838/srp.2020.11.43

Research Article

The Importance Of Spirituality, Physical Activity and Sleep Duration to Prevent Hypertension among Elderly in Aceh-Indonesia

Sufyan Anwar, Loh Su Peng, Trias Mahmudiono

SRP. 2020; 11(11): 1366 - 1370

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.194

Review Article

Evaluation of pharmacodynamics of ginger (*Zingiber officinale*) compared with gliclazide in diabetic rats

TAHA AM, TAYEE EM, Abdelkareem E and Taha Azouz

SRP. 2020; 11(11): 970 - 974

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.139

Review Article

The Effect of Market Orientation on Innovation Capacity through Entrepreneurial Orientation at Business Start-up Coffee Shop in Indonesia

Roy Setiawan, Anis Eliyana, Tatik Suryani, Hendro Prayitto

SRP. 2020; 11(11): 298 - 305

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.44

Review Article

Assessment of Possibility of Integration of Experience of Leading Countries Of The World In Training of Public Administration Specialists

Lyudmila Kotliar, Oleksandr Akimov, Orest Krasivsky& 1091,, Vasyi Shykerynets, Iliona Kurovska, Alla Hrusheva.

SRP. 2020; 11(11): 656 - 662

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.95

Research Article

Electrochemical *Bacillus licheniformis* Whole-Cell-Based Sensor and its Potential Application in Detecting Urea Concentration in Urine

D. Ariyanti, D. Iswanti, Purvantiningsih, N. Nurhidayat, and H. Effendi

SRP. 2020; 11(11): 1371 - 1377

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.195

Review Article

The Roles of Work Climate and Knowledge Sharing: The Effect of Leader Creative Behavior to Organizational Creativity at Furniture Industries in Indonesia

Roy Setiawan, Anis Eliyana, Tatik Suryani, Enrico Oktavian Sugiharto

SRP. 2020; 11(11): 306 - 314

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.45

Review Article

Study of some of Novel Selena-Diazole Derivative activities on Hematological Parameters, Differentiate lymphocytes cells in addition to thyroid hormones levels in Female Rats (One of the series of studies on the impact of the new compound)

Nadheerah F. Neamah, Shaker.A.N.Al-Jadaan, Asmaa M. Al_Ali

SRP. 2020; 11(11): 975 - 980

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.140

Research Article

The Effect of Folic Acid as Anti Fibrosis in Peritoneum of Rat

Wachid Putranto, Bambang Purwanto, Ambar Mudigdo, Brian Washita, Ari Natali Probandari

SRP. 2020; 11(11): 1378 - 1383

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.196

Review Article

Design and Synthesis of Possible Mutual Prodrugs of (Nsaid) Etodolac and Tolmetin with (Cytotoxic) Gemcitabine

Ammar Abdul Aziz Alibeg, Abbas H. Abdulsada, Noor H. Nasser, Karrar Abdil Aziz Ali beg.

SRP. 2020; 11(11): 315 - 318

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.46

Research Article

Effectiveness of not Quarantining Passengers after Having a Negative COVID-19 PCR Test at Arrival to Dubai Airports

Manal Taryam, Dhoha Alawadhi, Ahmad Aburayya, Ala' Albaqa'een, Alanood Alfarsi, Ibtihal Makki, Najma Rahmani, Muhammad Alshurideh, Said A. Salloum

SRP. 2020; 11(11): 1384 - 1395

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.197

Review Article

THE EFFECT ANALYSIS TOWARD LIQUIDITY, LEVERAGE ON THE COST EFFICIENCY OF CHEMICAL COMPANIES AND THE IMPACT ON THE FINANCIAL PERFORMANCE OF THE COMPANY

Masna Marjohan, Arsid, Nurminingsih.

SRP. 2020; 11(11): 318 - 327

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.47

Review Article

Study some immunological parameters of dietary supplementation turmeric powder in healthy common carp *Cyprinus carpio* L.

Qusia Saleih Jumaa, Sabah Mahmood Hamad al-shammari

SRP. 2020; 11(11): 981 - 983

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.141

Research Article

Nutrition Education on Food Hygiene and Sanitation to Increase Knowledge, Attitude and Practice among Canteen Food Handler in Indonesia

Trias Mahmudiono, Anisa Nindyasari, Calista Segalita, Aprilia Durotun Nasikhah, Loh Su Peng

SRP. 2020; 11(11): 1396 - 1400

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.198

Review Article

Social Work Facing New Normal Study Changes in Indonesia, China, Japan, Singapore, South Korea, Malaysia

Sakroni.

SRP. 2020; 11(11): 328 - 334

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.48

Research Article

On the Issue of Modeling the Process of Metabolic Syndrome Regulation

V.V. Benberin, T.A. Vochshenkova, A.S. Sibagatova, A.A. Nagimtaeva, K.M. Akhmetova, R.J. Karabaeva

SRP. 2020; 11(11): 1401 - 1405

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.199

Review Article

Whistleblowing on Tax Fraud - The Role of Monetary Incentives and Social Discrimination

Suparna Wijaya, Muhammad Asfroyanb

SRP. 2020; 11(11): 335 - 345

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.49

Review Article

Marketing Performance of SMEs Operating in Indonesia: Analyzing their Dependence on Marketing Intelligence Capability and Pricing Capability of Pharmaceutical Companies

Wiyadi, Noer Sasongko, Chuzaimah, Dudung Hadiwijaya, Rina Trisnawati

SRP. 2020; 11(11): 663 - 673

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.96

Review Article

Risk Prevention Model of Pulmonary Tuberculosis Incidence: A Qualitative Study

Stang, Anwar Maliongi, Indra Dwinata, Sumarni Marwang, Nurqalbi Sampara, Rismawati Simbung

SRP. 2020; 11(11): 346 - 349

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.50

Mini Review Article

ORIENTATION AND SENSING BASED DRIVERS TO ENHANCE MARKETING PERFORMANCE OF INDONESIAN PHARMACEUTICAL SMES: MEDIATING ROLE OF MARKET PIONEERING

Endang Sulistya Rini, Yeni Absah, Isfenti Sadalla

SRP. 2020; 11(11): 674 - 682

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.97

Review Article

Comprehensive Investigation about Biotechnological Drug Delivery

Sheyda Teymourfamianas

SRP. 2020; 11(11): 984 - 993

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.142

Research Article

Antiproliferative Activity of Bombax ceiba Flower Extract against Mammary Gland Carcinoma in Rats

Ahlam Hosny Mahmoud, Nadia Said Metwally, Eman Refat Youness, Safinaz Ebrahim El-Toukhy, Heba A. Elmalt and Asmaa Khairy Al-Mokaddem

SRP. 2020; 11(11): 1406 - 1415

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.200

Review Article

A Comprehensive Approach to Pedagogical Forms of Presenting Educational Information In Higher Education Institutions

Natalia Morska, Olena Fedorenko, Olha Davydova, Vitaly Andreev, Galina Bohatryyova, Natalia Shcherbakova.

SRP. 2020; 11(11): 683 - 690

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.98

Research Article

The Pathological Effect of Exogenous Testosterone on the Male Genital Organs of Rat

Hanaa Khudair Abaas

SRP. 2020; 11(11): 1416 - 1423

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.201

Review Article

Experience of Learning Foreign Languages in Higher Education Institutions of Ukraine: Consolidation of Forms and Methods

Myroslava Fabian, Tetiana Shavlovska, & 65279;Silvia Shpenyk, Natali& 1110;a Khanykina, Oleh Tyshchenko, Hanna Lebedynets

SRP. 2020; 11(11): 691 - 696

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.99

Review Article

The Collaborative Model of Husbands and Health Officers Roles in Improving Mother's Behaviour Towards Providing Exclusive Breastfeeding: a Qualitative Study

Stang, Tahir-Abdullah, Sumarni Marwang, Jumrah Sudirman

SRP. 2020; 11(11): 350 - 354

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.51

Review Article

The Moderating Effect of Effective Commitment among the Psychological Empowerment Dimensions and Organizational Performance of Thailand Pharmaceutical Industry

Chanakan Chavaha, Nutnapha Lekhawichit, Krisada Chienwattanasook, Kittisak Jermsittiparsert

SRP. 2020; 11(11): 697 - 705

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.100

Review Article

Medication-Related Challenges in Lower Middle-Income Countries of Asia: A Review of Four Countries and Recommendations for Improvement

Mansour Adam Mahmoud, Alnada Abdalla Mohamed Ibrahim, Sultan Othman Aiolayan

SRP. 2020; 11(11): 355 - 359

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.11.52

Review Article

Study the Effect of Rubia Cordifolia Extract on Different Type of Cancer Cell Lines and Different Microbial

Zahraa Ahmed Okhti, Basma Talib Al-Sudani, Maysaa E. Abdalah

SRP. 2020; 11(11): 994 - 1000

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👤 *Muna Hussain AL-Aameli, Yarub Modhar Al-Qazwini, Jabbar Abadi Mohammed.*

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👤 *Mudher Khudhur Mohammed, Lamis Khidher Mohammed, Haneen Mohanad Mohammed.*

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👤 *Ni Wayan Bogoriani, Ni Made Suaniti, Anak Agung Bawa Putra, Kadek Dwi Pradnya Lestari, Wayan Eka Heltiyani*

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👤 *Lamia S. Ashoor, Warka'a T. Saloum, Hassanain K. Al-Bairmani*

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A Review of Antimicrobial Resistance (AMR) of *Escherichia coli* on Livestock and Animal Products: Public Health Importance

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ABSTRACT

Antimicrobial resistance (AMR) has become a major challenge for the world of health in this century. This resistance event is closely related to the use of antibiotics that are not in accordance with the rules in both the hospital sector and the livestock sector. Antibiotics have an important role in treating infectious diseases. The role of antibiotics is expanding not only as a treatment but also to prevent disease and as a growth promoter in livestock. *Escherichia coli* has been widely used to monitor resistance in livestock and food of animal origin because these microbes can be found in the digestive tracts of warm-blooded animals. Several strains of *Escherichia coli* are potential sources of resistant genes that can be transmitted to humans. Livestock and food of animal origin such as poultry, pigs, cattle, sheep, eggs, and milk have become reservoirs for resistant *Escherichia coli*. It is not only resistant to one type of antibiotic but has also become multidrug resistant, and also become public health problem. *Escherichia coli* has different resistance mechanisms depending on the type of antibiotic. This resistance mechanism is also encoded by resistance genes which can be transmitted horizontally. Resistant bacteria encode different resistance genes for each antibiotic class. There needs to be strict regulations and supervision to limit the use of antibiotics in the livestock sector so that it can reduce cases of antibiotic recession in the world.

Keywords: *Escherichia coli*, Antimicrobial resistance, Livestock, Animal products, Public health

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INTRODUCTION

Antimicrobial resistance (AMR) was introduced more than fifty years ago and is the biggest challenge of this century. Resistance of pathogenic bacteria to antibiotics is one of the major public health problems of the 21st century (1). This resistance is a growing public health threat throughout the world (2). Microbes can simultaneously be resistant to several groups of antibiotics. This event is called multidrug-resistant, ie when the microbes are resistant to at least 3 types of antibiotics (3). This incident is associated with the use of antibiotics that are not according to the rules. Such as excessive use of antibiotics and errors in diagnosing diseases. Not only because of its use in humans but also on farm animals (4). The use of antibiotics is expected to continue to increase rapidly in the coming years due to the intensification of the livestock sector in many developing countries (5).

Animal husbandry is one of the sectors that has the potential as a reservoir for resistant microbes (4). The use of antibiotics in animal husbandry is directly related to the cases of resistant bacteria in food of animal origin (6, 7). In the poultry sector, breeders in various countries use antibiotics to raise poultry (8, 9). Antibiotics are given orally to treat livestock infected with pathogenic bacteria, prevent livestock from disease, and to increase productivity (10). The indiscriminate use of antimicrobials in livestock has the opportunity to accelerate the development of resistant pathogenic microbes as well as in commensal organisms (11). Apart from concerns about the emergence of AMR in bacteria from poultry production, there are also human health concerns about the presence of antimicrobial residues in foods of animal

origin such as milk (11), meat (12), and eggs (13). In addition, AMR in poultry pathogens is likely to result in economic losses. Infectious diseases in livestock that are not handled and due to the purchase of antibiotics that are not effective in treating them (14).

The case of resistance to the gram-negative group of bacteria is very worrying because of the limited choice of antibiotics to treat infections caused by several organisms such as Enterobacteriaceae, *Pseudomonas aeruginosa*, and *Acinetobacter* which have become resistant to almost all available antimicrobials, including carbapenems (4). The Enterobacteriaceae group is a microbe that is clinically fast growing agents to become resistant to available antimicrobials (15). Cases of microbial resistance to antibiotics that are widely reported in livestock and food of animal origin include *Escherichia coli*. Resistant *Escherichia coli* was found in chickens in Ghana (16), pork and beef in Mexico (17), chicken in Pakistan (18), chicken in France (19) and chicken in Indonesia (11).

OVERVIEW

Escherichia coli

Escherichia coli is a member of the Enterobacteriaceae family in the Gammaproteobacteria class (20) which is commonly found living in human and animal digestion as normal microflora (21). *Escherichia coli* includes Gram negative bacteria which are facultative anaerobes (22). These bacteria are Gram-negative bacteria with short rods, measuring 2.4 x 0.4-0.7 µm, motile with peritrichous flagella, and without spores and including opportunistic pathogens which always show increased resistance to various antibiotics. These bacteria have the highest

incidence of urinary tract infections (UTIs) (23). *Escherichia coli* is able to reproduce itself in approximately twenty minutes (20).

Escherichia coli is one of the bacteria that has been studied in depth. Sequence analysis of the *Escherichia coli* genome was first reported in 1997. Since then, more than 4800 *Escherichia coli* genomes have been sequenced (23). *Escherichia coli* can replicate in every 20 minutes. This rapid growth makes it suitable for observations of the evolution of microorganisms and research on long-term experimental evolution of more than 50,000 generations (24).

Escherichia coli has been widely used to monitor AMR in livestock and food of animal origin. This is because *Escherichia coli* can be found in the digestive tracts of warm-blooded animals (25). In addition, several strains of *Escherichia coli* are potential sources of the AMR gene which can be transmitted to humans through various means (21, 22). *Escherichia coli* carried through feces or treatment of wastewater that is disposed of into waterways can pollute the environment (26). The concentration of *Escherichia coli* per gram of feces varies across host species, typically reaching 107–109 in humans and 104–106 in domestic animals (27).

VIRULENCE FACTORS OF *ESCHERICHIA COIL*

Escherichia coli is a normal opportunistic flora in the digestive tract, that is, if the number is within normal limits, the bacteria can be beneficial, but if there is an increase in the number from normal, the bacteria will become pathogenic (28). Pathogenic *Escherichia coli* can cause disease in the intestinal tract as well as outside the intestine (29). There are six intestinal pathotypes of *Escherichia coli* including Shiga toxin-producing *Escherichia coli* (STEC), entero-toxigenic *Escherichia coli* (ETEC), enteropathogenic *Escherichia coli* (EPEC), diffusely adherent *Escherichia coli*, and enteroinvasive *Escherichia coli*. These strains are classified based on their virulence properties and pathogenicity mechanisms that cause gastrointestinal diseases such as diarrhea (30, 31). *Escherichia coli* is the main cause of urinary tract infections (UTIs). Apart from being infected with *Escherichia coli*, UTIs can also be caused by *Proteus* spp., *Staphylococcus saprophyticus*, *Klebsiella* spp. and other Enterobacteriaceae. However, among UTI-causing bacteria, *Escherichia coli* is considered to be the most dominant cause of community and nosocomial UTI. In addition, having a history of UTI in a patient increases the chance of infection (23). Therapeutic measures for UTI treatment use several antibiotic options including cotrimoxazole (trimethoprim / sulfamethoxazole), nitrofurantoin, ciprofloxacin and ampicillin (32, 33). However, studies of antibiotic resistance using urinary tract isolates from *Escherichia coli* have shown increased resistance to certain antibiotics, for example to ampicillin and cotrimoxazole (32).

Escherichia coli causes infection in the bloodstream which can cause morbidity, mortality, and health problems (34). These infections can increase the mortality rate in the hospital and lead to resistance to antibiotics, leading to longer hospital stays (35). Nosocomial bloodstream infections caused by resistant bacteria have been reported in Africa, especially in areas that are vulnerable and at high risk of developing nosocomial infections, such as in intensive care units and pediatric departments (36-38).

USE OF ANTIBIOTICS IN ANIMALS

Antibiotics have contributed greatly to human and animal health since their appearance in the 1940's. The development of antibiotics in today's era cannot be separated from the services of Alexander Fleming who discovered penicillin in 1928 (38). The use of antibiotics can be found in several sectors, such as hospitals (39), animal husbandry and agriculture (40), and fisheries (41) which have the impact of increasing AMR on livestock (42-46), pet (47-50), poultry (51-55), fisheries (56-59) and also obtained from animal products (60-65). The use of antibiotics is increasingly widespread, not only for treating infectious diseases (66), but also for disease prevention and as growth promoters in livestock. Unfortunately, the use of antibiotics in subtherapeutic doses for disease prevention and growth enhancement is higher than for the treatment of disease (67-69). This is one of the factors that triggers AMR in livestock (70).

For at least 50 years, farms in the United States and other developed countries have used antibiotics as Antimicrobial Growth Promoters (AGPs). AGP was first introduced in the mid-1950s. The use of antibiotics as AGP were streptomycin, sulfasuxidine, and streptothricin to pig and chicken feed which has been shown to have a beneficial effect on livestock production for first reported (71).

Antibiotics commonly used in humans include penicillins, fluoroquinolones, and macrolides. Meanwhile, sulfonamides, penicillins, and tetracyclines are often used in animals (11). In a survey conducted in China in 2010, it was found that there were residues of ciprofloxacin, oxytetracycline, enrofloxacin and chlortetracycline in 143 manure samples (72). A survey in Chile suggested that antibiotic residues were also found in eggs produced on farms (73). Due to the high concentration of antibiotics in livestock manure, this manure is often used for fish use because it is believed to increase fish growth and maintain pond fertility (74).

Because the use of antibiotics has resulted in increasing cases of resistance, several countries have limited their use. As in the EU, the use of antibiotics as Antibiotic Growth Promoters (AGP) has been banned since 2006. While in the US it has been banned starting in 2017. In Europe, the European Food Safety Authority (EFSA) and the European Medicines Agency (EMA) recommend steps to reduce the use of antimicrobials in animal husbandry in the European Union (79). France also issued a policy of prohibiting the excessive use of antibiotics in chickens (19).

AMR OF *ESCHERICHIA COIL* IN FOOD OF ANIMAL ORIGIN

Escherichia coli lives in both animals and humans as normal flora which has many uses (21). But on the other hand, it can also harm humans because it causes infectious diseases (28). To avoid these losses, breeders take precautions so that their livestock remain healthy and have high productivity (72, 75). Farmers give antibiotics to prevent infection and add antibiotics as additional feed to increase livestock productivity. The use of antibiotics without supervision can lead to resistance to one antibiotic or even more than 3 antibiotics called multidrug resistant (MDR). A total of 94.9% *Escherichia coli* in sheep isolates showed the presence of MDR during the antibiotic sensitivity test (76). This high percentage illustrates the potential for spreading resistant microbes through animal husbandry (16). The level of microbial resistance to

antibiotics is called antimicrobial resistance (AMR) will continue to increase if farmers continue to use antibiotics excessively.

Cases of resistant *Escherichia coli* were found on farms, both in livestock and breeders (77). Livestock such as chicken, turkey, pig, cow, as well as food of animal origin such as eggs and milk are reported as reservoirs of resistant *Escherichia coli*. The majority of *Escherichia coli* isolated turned out to be resistant to penicillin class antibiotics such as penicillin, ampicillin and amoxicillin. *Escherichia coli* isolates isolated from milk isolates in India were reported to be 100% resistant to penicillin. Likewise in Indonesia, *Escherichia coli* isolates isolated from beef were also reported to be 100% resistant to ampicillin, which is a penicillin antibiotic class (12). For foods of other animal origin, microbial resistance to the penicillin class is also high, for example *Escherichia coli* in eggs in Pakistan reached 83.3% (78), chicken and turkey in Arizona (79). Apart from livestock, cases of resistant *Escherichia coli* were also found in breeders. As Aworh reports, workers on Nigerian farms are also at risk of carrying *Escherichia coli* resistant to ampicillin, tetracycline, sulfamethoxazole-trimethoprim, and streptomycin. This resistant *Escherichia coli* can be transmitted from animals to humans via several transfer mechanisms (76). Transmission of *Escherichia coli* from animals into the human body can occur in at least two ways, namely (a) when humans eat food of animal origin that is contaminated with bacteria, the food is not washed and cooked properly and (b) through direct contact with existing *Escherichia coli*. Livestock is a reservoir of resistant *Escherichia coli* which has a resistance coding gene. The gene can reach humans via the food chain (76). Antimicrobial resistance in chickens is a common problem in Bangladesh and other developing countries due to the indiscriminate use of antibiotics as feed additives and prophylactic treatment of infectious diseases. Commonly used antibiotic agents, such as ampicillin, tetracycline, streptomycin, ciprofloxacin, erythromycin, sulfamethoxazole-trimethoprim, cholistine sulfate, gentamicin, and levofloxacin have relatively high levels of resistance than previously reported. (80). The presence of MDR also cannot be separated from microbial resistance in animal husbandry. The *Escherichia coli* isolate showing very high resistance to multiple antibiotics and a high prevalence of MDR leads to an alarming situation that requires further investigation. There is a need for a framework to address these problems (81). Due to the lack of choice of antibiotics that are sensitive to bacteria, further research on alternative antimicrobial agents is currently urgently needed (80).

MECHANISM OF RESISTANCE ON *ESCHERICHIA COIL*

Escherichia coli belongs to the Gram-negative bacteria group. Gram negative bacteria are more easily resistant because they have an outer membrane that is not owned by the Gram-positive bacteria group. The outer membrane of Gram negative is an essential structure in protection against antibiotics (81). The inner structure of this outer membrane is composed of phospholipids (PLs) and lipopolysaccharides (LPs) in the outer structure (82). PLs and LPs act as bacterial membrane defenses because they are composed of saturated chains so that they are hydrophobic (83). The molecules making up PLs and LPs each carry a negative charge which allows for intermolecular linking interactions through the binding of divalent cations (84) and the presence of porin as ion

selective channels so as to limit the absorption of antibiotics (85)

Escherichia coli has the ability to modify antibiotic targets including the aminoglycoside class of antibiotics by modifying the ribosomal subunit through the acquisition of plasmids carrying 16S rRNA methyltransferases (86-87) against the fluoroquinolone group by means of mutations in the GyrA subunit which is chromosomally coded from gyrase (*gyrA* gene) or the ParC subunit of topoisomerase IV (*parC* gene) (88) and against penicillin by modifying penicillin-binding protein (PBP) (89, 90).

β -lactam is a class of antibiotics that has 3 carbon rings and 1 nitrogen ring which is responsible for the bacteriolytic mechanism of action against bacteria. β -lactam works by inhibiting the synthesis of peptidoglycan which is an important component of bacterial cell walls. *Escherichia coli* is able to be resistant to β -lactam by producing β -lactamase enzymes. The most widely used classification for the β -lactamase enzyme is the Ambler structural classification, which is based on the similarity of the sequence, so that this protein is divided into four classes, namely classes A, C, and D of serine- β -lactamase and class B of metallo- β -lactamase (91). *Escherichia coli* is capable of producing several types of enzymes such as broad-spectrum β -lactamase (ESBL), AmpC β -lactamase (AmpC) (92) and carbapenemase which have different hydrolytic activity against β -lactam antibiotics (93). ESBL is a major concern in the medical world because it has the highest level of causative factors for β -lactamase resistance (94). ESBL is predominantly class A in the Ambler classification and is resistant to penicillins, first, second, and third generation cephalosporins and monobactams (for example, aztreonam), but cannot hydrolyze cephamycins (cefoxitin) or carbapenems (imipenem, meropenem), and can be inhibited by β -lactamase inhibitors such as clavulanic acid, tazobactam and sulbactam (95).

AmpC has the ability to hydrolyze amino- and ureidopenicillins, oxyimino- β -lactams such as ceftazidime, ceftiofur, and aztreonam and deactivate cephalosporins such as cephamycins (cefoxitin) (96-97). AmpC-producing *Escherichia coli* strains ranging from 2.0% were isolated from patients in Portuguese hospitals (98) to 16.7% from three university hospitals in Iran (99) and 29.0% from five referral hospitals in Sudan (100) AmpC and ESBL may be owned by a strain of *Escherichia coli* simultaneously which causes the mechanism of action of antibiotics to be more complicated and resistance to increase (82, 101).

Carbapenems bind to penicillin-binding proteins and induce spheroplast formation and cell lysis. The *Escherichia coli* strain that produces carbapenemase has the ability to hydrolyze the antibiotic carbapenem (102). Increased resistance to carbapenem antibiotics has been reported in several countries, one of which is China, which in 2011 was 0% of cases then increased to 1.9% in 2017 (103).

Several types of efflux pumps found in *E. coli* are the ATP-binding cassette (ABC) family, the multidrug and toxic compound extrusion (MATE) family, the major facilitator superfamily (MFS), and the resistance-nodulation cell division (RND) family. *Escherichia coli* has an ABC group efflux pump, namely the MacAB transporter which provides resistance to several macrolides (104); MATE which is capable of transporting fluoroquinolones (105, 106); MFS capable of transporting macrolides (MefB and MdfA pumps), fluoroquinolones (QepA2, EmrAB-TolC, and MdfA pumps), tetracyclines (EmrAB-TolC and MdfA pumps), trimethoprim (Fsr pumps), and chloramphenicol

(MdfA pumps) (107, 108); and RND which can release β -lactam, fluoroquinolone, tetracycline, chloramphenicol, and lincosamides (109-111).

FACTORS THAT INCREASE RESISTANCE ON *ESCHERICHIA COILI*

High population density goes hand in hand with the increasing need for food derived from livestock. As a result, an intensive strategy is needed to prevent and control pathogenic infections by using antibiotics. The use of antibiotics in livestock requires a prescription from a doctor. However, farm managers often given antibiotics of their own accord even though it is in accordance with the guidelines given by veterinarians (112, 113). In addition, in some countries, antibiotics are available over the counter without a prescription. This absence of regulation makes antibiotics readily available, abundant and cheap, thus encouraging overuse. The ability to purchase such products online has also made them accessible in countries where antibiotics are regulated (114). Administration of antibiotics in livestock that is not in accordance with the needs (misused) which causes increased resistance to pathogens including *Escherichia coli* (115). Antibiotics used in livestock that induce resistance can enter the human body through the consumption of feed from livestock (116). Resistant bacteria that enter the human body will cause adverse health problems (34).

GENE CODE FOR RESISTANT TO ANTIBIOTICS ON *ESCHERICHIA COILI*

Bacterial resistance to antibiotics is classified into two types, namely intrinsic resistance and acquired resistance (117). Intrinsic resistance is a congenital resistance due to the insensitivity of bacteria to certain antibiotic classes. This is due to the inability of the target structure for certain antibiotics, for example, vancomycin resistance in Gram negative bacteria due to the inability of vancomycin to penetrate the outer membrane (118). Conversely, acquired resistance is resistance caused by the acquisition of a foreign resistant gene or gene mutation (119). In bacteria, genes can be inherited from relatives or can be obtained from non-relatives of mobile elements such as plasmids. This horizontal gene transfer (HGT) may allow antibiotic resistance to be transmitted between different bacterial species (120). Resistance can also occur spontaneously via mutation (121).

Resistant bacteria encode different resistance genes for each antibiotic class. Gram negative bacteria that are resistant to the aminoglycoside antibiotic class have resistant coding genes, namely *armA* (122) *npmA*, *rmtA*, *rmtB*, *rmtC*, and *rmtD* (123,124). The *rmt* gene provides resistance to gentamicin and amikacin, while *npmA* provides resistance to gentamicin, neomycin, amikacin, and apramycin, but not to streptomycin (125). Meanwhile, the gene coding for *Escherichia coli* resistance can come from humans and animals. *blaTEM-1* is an animal-derived *Escherichia coli* resistance gene to β -lactam that can inactivate penicillins and aminopenicillins. Meanwhile, the most common ESBL gene in *Escherichia coli* isolates of human origin is *blaCTX-M-15* (126).

The target of the fluoroquinolone antibiotic against *Escherichia coli* is gyrase. *Escherichia coli* developed a fluoroquinolone resistance mechanism by carrying out mutations encoded by the *gyrA* and *parC* genes (127). Other genes at play are *qnrS1*, *qnrB1*, *qnrB4*, and *qnrB10* (128). *Escherichia coli* resistance to tetracycline

antibiotics is coded by *tet (A)*, *tet (B)*, *tet (C)*, *tet (D)*, *tet (E)*, *tet (G)*, *tet (J)*, *tet (L)*, and *tet (Y)* as the gene coding for the efflux pump and *tet (M)* and *tet (W)* as ribosome protectors (129). The coding genes for *Escherichia coli* resistance to phenicol antibiotics include *paint*, *fluorine*, and *cfr* (130). *Escherichia coli* of animal origin, is resistant to sulfonamide antibiotics mediated by *sul1*, *sul2*, or *sul3*. The *sul2* gene is associated with the streptomycin *strA-strB* resistance gene whereas *sul3* is associated with other resistance genes, such as the *mef (B)* macrolide resistance gene (131).

The *dfr* gene modulates resistance to trimethoprim antibiotics in Enterobacteriaceae and other Gram-negative bacteria. Based on its size and structure, the *dfr* gene is divided into two major groups, namely *dfrA* and *dfrB* (132-133). The *dfrA* gene encodes a protein from 152 to 189 amino acids, while *dfrB* encodes a protein of 78 amino acids. Most of the *dfrA* and *dfrB* genes are found in *Escherichia coli* of animal origin. *Escherichia coli* is also resistant to polymyxin antibiotics which are modulated by the *pmrA*, *pmrB*, *mgrB*, *phoP*, and *phoQ* genes isolated from pigs (134).

CONCLUSION

Microbial resistance to antibiotics is a health problem that continues to be a global challenge. One of them is *Escherichia coli* which is commonly found in livestock and humans as well as animal products that are resistant to several classes of antibiotics. Animals and food of animal origin such as poultry, pigs, cattle, sheep, eggs, and milk are reservoirs for resistant *Escherichia coli* that have the potential to cause disease in humans. Because there are fewer choices of antibiotics that are sensitive to microbes, it is necessary to look for new antibiotic alternatives that are more effective in treating pathogenic infections, especially *Escherichia coli*. In addition, there is a need for strict regulations governing the use of antibiotics in livestock and poultry to break the chain of antibiotic resistance.

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