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👤 Sudarmono, Sunardhi Widyaputra, Suhardjo Sitam, Inne Suherna, Arni Diana Fitri, Arif Rachman

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[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.81

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**Review Article**[Isolation, Chemical Structure Elucidation and Bioactivities of Argania spinosa Cell Wall Polysaccharides: A Review](#)

👤 Kadda Hachem, Meriem Kaid-Harche

SRP. 2020; 11(8): 276 - 282

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.41

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**Review Article**[Develop Leadership Style Model for Indonesian SMEs Leaders During Covid-19 Pandemic](#)

👤 Sanusi, Eny Suheny, Mega Arum, Didi Wandu, Ariawan Rahmat, Asih kurnianingsih, Anggi Haerani, Verliani Dasmawan, Taryanto, Suhroji Adha, Agus Purwanto.

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[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.82

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**Review Article**[Pedagogical Aspects of Formation of Cognitive Interest in Students as a Technology of Interactive Learning in Higher Educational Institutions](#)

👤 Tamara Skoryk, Alla Vozniuk, Olena Babkova, Tetiana Babko, Oleksandr Vydra, Olha Halitsan

SRP. 2020; 11(8): 283 - 286

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.42

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**Research Article**[Low Butyric Acid is Associated With Constipation in Geriatrics](#)

👤 Fauzi Yusuf, Muhammad Darma Muda Setia, Kudrah Manik and Muhsin Muhsin

SRP. 2020; 11(8): 587 - 592

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.83

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**Research Article**[Analogy of Tasks of Traditional and Interactive Approaches to Students' Education in Higher Education Institutions](#)

 Yana Okopna, Nataliia Morska, Olha Stakhova, Liudmyla Voinalovych, Oksana Protas, Olha Kravchenko

SRP. 2020; 11(8): 287 - 289

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.43

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#### **Review Article**

##### [The Strategy of Islamic Microfinance to Strengthen Company Performance in Indonesia](#)

 Hariandy Hasbi, Moeljadi Moeljadi, Noermijati Noermijati, Ainur Rofiq

SRP. 2020; 11(8): 593 - 601

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.84

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#### **Review Article**

##### [RELATIONSHIP OF FARMERS CHARACTERISTICS TO THE LEVEL OF APPLICATION OF SOYBEAN PLANT TECHNOLOGY \(Glycine max L. Merrill\)](#)

 Achmad Faqih

SRP. 2020; 11(8): 602 - 606

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.85

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#### **Research Article**

##### [THE PLACE AND ROLE OF INDEPENDENT WORK IN THE MODERN EDUCATION SYSTEM](#)

 Oksana Bepalova, Anna Liakisheva, Anatolii Silvestr, Andrii Konokh, Anatoly Konokh, Snizhana Kubrak

SRP. 2020; 11(8): 290 - 294

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.44

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#### **Research Article**

##### [The Role of Self-Efficacy On Self-Esteem and Entrepreneurs Achievement](#)

 Anis Eliyana, Musta'in, Ahmad Rizki Sridadi, Evi Umrah Widiyana

SRP. 2020; 11(8): 314 - 319

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.48

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#### **Research Article**

##### [Influence of Satisfaction and Motivation on Business Success Surabaya](#)

 Anis Eliyana, Musta'in, Ahmad Rizki Sridadi, Eko Abdiyanto

SRP. 2020; 11(8): 320 - 327

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.49

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#### **Review Article**

##### [IMPROVING SOCIAL STUDIES LEARNING OUTCOMES BY USING COMPARISON CONCEPT](#)

 Andy Ahmad, Iyay Robia Khaerudin, Deti Rostini, Sarmauli, Abdul Hakim Ma'aruf

SRP. 2020; 11(8): 607 - 610

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.86

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#### **Research Article**

##### [Linking Self Efficacy on Motivation and Entrepreneurial Achievements](#)

 Anis Eliyana, Musta'in, Ahmad Rizki Sridadi, Novia Aviantari


SRP. 2020; 11(8): 328 - 334

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.50

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[Differences of water status and relationship with roots growth and yield of rice under water stress](#)

 *Cut Nur Ichsan, Bakhtiar Basyah, Sabaruddin Zakaria, Efendi Efendia*


SRP. 2020; 11(8): 611 - 618

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.87

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#### Research Article

[The Role of Motivation on Attitudes and Entrepreneur Achievement](#)

 *Anis Eliyana, Shochrul Rohmatul, Shochrul Rohmatul, Ahmad Rizki Sridadi, Alfian Razaq, Desynta Rahmawati Gunawan*

SRP. 2020; 11(8): 335 - 343

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.51

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#### Review Article

[Educational Management for Baduy Tribe's Children in Lebak Banten](#)

 *Eka Rista Harimurti, Deti Rostini, Otto Fajarianto*

SRP. 2020; 11(8): 618 - 626

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.88

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[Information Overload and Communication Overload on Social Media Exhaustion and Job Performance](#)

 *Anis Eliyana, Shochrul Rohmatul Ajija, Ahmad Rizki Sridadi, Anis Setyawati, Alvin Permana Emur*

SRP. 2020; 11(8): 344 - 351

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.52

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[Legal Awareness and Legal Compliance of Gay Communities for HIV/AIDS Transmission in Urban Areas \(A Study in a Developing Country\)](#)

 *Endang Sutrisno, Ayih Sutarih, Nanang Ruhjana*

SRP. 2020; 11(8): 627 - 634

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.89

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[Developing Good Village Governance to Prevent Corruption of Village Fund](#)

 *Ipik Permana, Sri Wulandari, Acep Komara.*

SRP. 2020; 11(8): 635 - 639

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.90

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[Develop Leadership Style Model for Nurse in Indonesian Hospital](#)

 Nani Yunarsih, Sri Rahayu, Fatoni, Asra, Agus Sustiyono, Tasbihul Anwar, Nina Sri, Agus Purwanto


SRP. 2020; 11(8): 352 - 361

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.53

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#### **Review Article**

### [The Similarity of Fourier Transform Infrared \(FTIR\) Spectroscopy Absorbance in Several Products of Cooking Spice in Indonesia](#)

 Mujianto, Wignyanto, Nur Hidayat, Aulanni@am

SRP. 2020; 11(8): 640 - 650

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.91

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#### **Review Article**

### [Standard Contract for Banking Credit Agreements According to Government Policy No. 8 of 1999 in Relation to Government Policy No.10 of 1998](#)

 NINA Yolanda


SRP. 2020; 11(8): 651 - 655

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.92

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#### **Research Article**

### [FAST Leadership Model for University Leaders Performance in Pharmacy Faculty: Yesterday, Today and Tomorrow](#)

 Bambang Ismaya, Teguh Setiawan, Ika Sulistyarini, Ambar Winarti, Rifda Nabila, Ine Rahayu Purnamaningsih, Haryati, Agus Purbo Widodo, Ivan Charles Seran Klau, Agus Purwanto

SRP. 2020; 11(8): 362 - 373

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.54

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#### **Review Article**

### [The Use of Hypnoteaching Techniques in Improving the Skills of Writing Scientific Articles of the Third Grade Office Administration Students at Giri Taruna Vocational High School Bogor](#)

 Nini Ibrahim


SRP. 2020; 11(8): 656 - 659

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.93

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#### **Review Article**

### [ANALYSIS OF THE RELATIONSHIP BETWEEN EFFECT OF BIOFERTILIZER AGENT ACTIVITY ON SOIL ELECTROLIT CONDUCTIVITY & ACIDITY USING REAL TIME DATA OF THE SMART BIOSOILDAM](#)

 Nugroho Widiasmadi


SRP. 2020; 11(8): 660 - 665

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.94

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#### **Research Article**

### [Islamic Leadership Model for Indonesian Millennial Teachers Performance in Pharmacy Schools](#)

 Muh. Ubaidillah Al Ghifary Slamet, Asdiana, Aufa Abdullah, Abduloh, Mochammad Fahlevi, Ramsah Ali, Evanirosa, Abdul Mufid, Agus Purwanto, Faiz Faricha, Khairullah, Ahmad Zumaro

SRP. 2020; 11(8): 374 - 382

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.55

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**Review Article**[Fuzzy Model Optimization Using of Giving the Amplitude Scale Factor](#)


 Nurhayadi, Subanar, Abdurakhman, Agus Maman Abadi, Rahmat Hidayatullah, Muh Rizal, Sudarman

SRP. 2020; 11(8): 666 - 670

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.95

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**Research Article**[INNOVATION AND AUTHENTIC LEADERSHIP OF ISLAMIC UNIVERSITY LECTURES IN FACULTY PHARMACY FACULTY: WHAT IS THE ROLE OF PSYCHOLOGICAL CAPITAL?](#)

 Dikdik Supriyadi, Lely Nur Hidayah Syafitri, Syukri Fathudin Achmad Widodo, Ridhouh Wahidi, Yusvita Nena Arinta, Faqih Nabhan, Abdul Mufid, Agus Purwanto, Mochammad Fahlevi, Denok Sunarsi, Yoyok Cahyono

SRP. 2020; 11(8): 383 - 393

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.56

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**Review Article**[The Use of Dates against COVID-19, based on Effectiveness or Religion's Believe? Trends and Relevance Analysis in Big Data](#)

 Maslichah Mafruchati

SRP. 2020; 11(8): 394 - 399

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.57

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**Research Article**[NUTRITIONAL EDUCATION INTERVENTION BY GIVING SNAKEHEAD FISH MEATBALL TO INCREASING NUTRITIONAL STATUS OF CHILDHOOD STUNTING AND IMPROVEMENT OF MOTHER'S CARE PATTERNS IN LAMONGAN DISTRICT](#)

 Trias Mahmudiono, Belinda Putri Ardianti, Muhammad Fifin Kombih, Kus Aisya Amira, Diah Indriani

SRP. 2020; 11(8): 400 - 405

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.58

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**Research Article**[BOOTSTRAP AGGREGATING MULTIVARIATE ADAPTIVE REGRESSION SPLINE FOR OBSERVATIONAL STUDIES IN DIABETES CASES](#)

 Bambang W. Otok, Romy Y. Putra, Sutikno, Septia D. P. Yasmirullah

SRP. 2020; 11(8): 406 - 413

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.59

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**Research Article**[MERCURY EXPOSURE FROM FISH IN THE KENJERAN BEACH AREA, SURABAYA: RESEARCH PROTOCOL](#)

 Trias Mahmudiono, Aprilia Durotun Nasikhah, Clara Cahyaning Wishesa, Diah Indriani, Stefania Widya Setyaningtyas

SRP. 2020; 11(8): 414 - 417

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.60

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**Review Article**

### [Perceptive Review on Properties of Iron Oxide Nanoparticles and Their Antimicrobial and Anticancer Activity](#)

 Rana Abu-Huwaij, Sarah F. Al-Assaf, Farah Mousli, Maram S. Kutkut, Ahlam Al-Bashtawi


SRP. 2020; 11(8): 418 - 431

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.61

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#### **Research Article**

### [Influence of the Experience of Health-Improving Jogging on the Level of Functional Activity of Platelets in Men of the Second Mature Age](#)

 Medvedev Ilya Nikolaevich, Gusev Alexey Vitalievich, Malyshev Andrey Valentinovich, Mikhailova Olga Dmitrievna, Garina Evgeniya Vladimirovna, Petina Elmira Shamilevna, Tagirova Naida Dzhamaaldinovna


SRP. 2020; 11(8): 432 - 438

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.62

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### [Influence of Regular Feasible Physical Activity on the Platelet's Functional Activity of the Second Mature Age People](#)

 Karpov Vladimir Yurevich, Zavalishina Svetlana Yuryevna, Dorontsev Alexander Viktorovich, Voronova Natalia Nikolaevna, Shulgin Alexander Mikhailovich, Sharagin Victor Ivanovich, Koz'yakov Roman

SRP. 2020; 11(8): 439 - 445

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.63

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### [SHARIA COMPLIANCES OPTIMIZATION IN THE ISLAMIC FINANCIAL INDUSTRY DEVELOPMENT](#)

 Renny Supriyatni.

SRP. 2020; 11(8): 671 - 677

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.96

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#### **Review Article**

### [MONEY POLITICS EXISTENCE AND THE DEMORALIZATION OF DEMOCRACY](#)

 Sanusi, Endang Sutrisno, Ibnu Artadi

SRP. 2020; 11(8): 678 - 681

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.97

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#### **Review Article**

### [Indonesias? Multilevel Marketing Organization Competitiveness UNDER Turbulences: A Proposes Model](#)

 Thamrin Selamat, Tirta Nugraha Mursitama, Asnan Furinto, Pantri Heriyati

SRP. 2020; 11(8): 689 - 694

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.98

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#### **Research Article**

### [Degree of Conversion of Two Universal Adhesives Incorporated with Ascorbic Acid Coated Superparamagnetic Nanoparticles Assessed by FTIR Degree of conversion, universal adhesives, Superparamagnetic Fe<sub>3</sub>O<sub>4</sub>nanoparticles, FTIR analysis](#)

 Mohammed A. Fadhil, Abdulla M.W. Al-Shamma, Muqdam M. Alali

SRP. 2020; 11(8): 452 - 459



[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.65

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##### [Hepatic Hydatid Cyst Diseases during Pregnancy: Diagnosis, Management and Best Practice](#)

 Ibrahim Falih Noori, Azza Sajid Jabbar


SRP. 2020; 11(8): 689 - 694

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.99

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#### Case Report

##### [Situation Report: Maternal Health Management during COVID-19 Pandemic at Soetomo General Hospital and Universitas Airlangga Academic Hospital, Surabaya Indonesia](#)

 Muhammad Ardian Cahya Laksana, Pandu Hanindito Habibie, Manggala Pasca Wardhana, Khanisyah Erza Gumilar, Muhammad Yusuf, Prima Rahmadhany, Brahmata Askandar, Ernawati


SRP. 2020; 11(8): 467 - 471

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.67

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#### 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(8): 695 - 705

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.100

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##### [Thyroid Autoantibodies as a Useful Guideline in Hyperthyroidism Patients Treated with Radioactive Iodine](#)

 Zena A. Khalaf, Hameed M. Jasim, Satar M. Kadam, Ali A. Mahdi

SRP. 2020; 11(8): 706 - 712

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.101

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##### [Effect of Lactobacillus fermentum filtrate on Pseudomonas aeruginosa adhesion at biotic and abiotic surfaces](#)

 Abdullah Laith Khalil, Sanaa Rahman Olewi

SRP. 2020; 11(8): 713 - 720

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.102

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##### [The Relationship between Diabetes Mellitus and Renal Failure in Babylon Province](#)

 Hayder Yahya Ahmed, Alaa Hashim Abd Ali.

SRP. 2020; 11(8): 721 - 724

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.103

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[New mixed ligand complexes of New Schiff base 4,4'-\(\(naphthalen-1-ylimino\) methylene\) dibenzene-1,3-diol and 8-hydroxy quinoline: Synthesis, Spectral Characterization, Thermal studies and Biological Activities](#)

👤 *Eman Mutar Atiyah, Wasan Mohammed Alwan, Hiyam Hadi Alkam*

SRP. 2020; 11(8): 725 - 735

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.104

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**Review Article**

[EVALUATION OF PHARMACY STUDENT AND COMMUNITY PHARMACIST KNOWLEDGE AND IMPACT ON DISEASE STATE MANAGEMENT OF PATIENTS WITH ASTHMA](#)

👤 *Qutaiba Ahmad Al Khames Aga, Mansour haddad, Yazan A. Bataineh, Abdel Naser Dakkah, Abeer Jabra Shnoudeh, Randa SH Mansour*

SRP. 2020; 11(8): 472 - 480

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.68

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[Anatomical study of Combretum indicum \(L.\) DeFilipps cultivated in Iraq](#)

👤 *Muazaz A. AL-Hadeethi, Ali T. AL-Taie and Jwad K. Ali.*

SRP. 2020; 11(8): 736 - 741

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.105

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[Study the effects of smoking on selected oral biomarkers levels in chronic periodontitis cases in Al-Hilla city](#)

👤 *Hanan Selman Hesan, Zainab Muhi Hameed, Doaa Adil Abood*

SRP. 2020; 11(8): 742 - 746

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.106

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[Anthology the Study of Foreign Languages in Institutions Higher Education](#)

👤 *Yuliia Korneiko, Anna Ieliseienko, Yurii Bets, Liudmyla Turlak, Svitlana Chyzh, Liudmyla Usyk*

SRP. 2020; 11(8): 481 - 490

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.69

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[Osteoporosis: A Review of the Factors Affecting Osteoporosis and its Management](#)

👤 *Parisa Delkash, Faraneh Farsad*

SRP. 2020; 11(8): 747 - 751

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.107

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[Effect of Application of Multi Wall Carbon Nanotubes \(MWCNTs\) on Implant](#)

👤 *Mohammed Kadhim Al-Koofee, and Norehan Moktar*

SRP. 2020; 11(8): 759 - 764

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.109

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#### Review Article

[Conservative Treatment of Low back Pain in Lumbar Disc Herniation: Comparison of Three Therapeutic Regimens](#)

👤 *Alireza Manafi Rasi, Ahmadreza Mirbolook, Reza Tavakoli Darestani, Shahram Sayadi, Mojtaba Baroutkoub, Mohammad Mahdi Omidian, Hasan Barati, Seyed Shayan Ebadi, Farzad Amouzadeh Omrani.*

SRP. 2020; 11(8): 765 - 769

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.110

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[Historical and Pedagogical Aspects of Application of Forms and Methods of Learning Foreign Languages In Institutions of Higher Education of Ukraine](#)

👤 *Alla Syniavska, Tetiana Sharhun, Olena Lauta, Iryna Bets, Mariya Yarmolenko, Viktoriia Berezovska*

SRP. 2020; 11(8): 491 - 498

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.70

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#### Review Article

[Intramedullary Nailing Vs Plate Fixation for the Treatment of Humeral Shaft Fractures; which One is Better?](#)

👤 *Farzad Amouzadeh Omrani, Mohamadsadegh Rezayian, Mahsa Ejlali, Shahram Sayadi, Mojtaba Baroutkoub, Mohammad Mahdi Omidian, Hasan Barati, Seyed Alireza Ebadi, Reza Tavakoli Darestani*

SRP. 2020; 11(8): 770 - 774

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.111

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[Genetic Diversity of Three Medicinal Plants of Apiaceous Family](#)

👤 *Ola Hataf Hazim, Mohammed Ayyed Najm, Zaid Osamah Ibraheem*

SRP. 2020; 11(8): 775 - 778

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.112

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[Comparative Study of Three Techniques of Repair for Severe Functional Tricuspid Valve Regurgitation](#)

👤 *Ahmed M.A Shafeek, Khalid Hassan AbdEl Bary, Mohamed Essa, and Ehab Sobhy*

SRP. 2020; 11(8): 779 - 784

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.113

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[Did Quality Management System ISO 9001 Version 2015 Influence Business Performance? Evidence from Indonesian Hospitals](#)

👤 *Rinto Noviantoro, Nihayatul Maskuroh, Budi Santoso, Muhammad Nur abdi, Mochammad Fahlev, Rudy Pramono, Agus Purwanto, John Tampil Purba, Ashiong Parhehean Munthe, Juliana*


SRP. 2020; 11(8): 499 - 507

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.71

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#### **Review Article**

##### [Legal Regulation of the Right to Information About One's Health](#)

 *Natalya Khodeeva, Viktor Bed, Myroslava Bertsikh, Liudmyla Prypolova, Roksolana Hrechaniuk, Iryna Lasko*

SRP. 2020; 11(8): 295 - 300

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.45

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#### **Review Article**

##### [Contractual Relations in the Information Sphere](#)

 *Svitlana Iasechko, Mykola K. Haliantych Vitalii B. Skomorovskyi, Volodymyr Zadorozhnyi, Oksana Obryvkina, Oksana Pohrebniak*


SRP. 2020; 11(8): 301 - 303

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.46

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##### [BENEFIT OF BENCHMARKING METHODS IN SEVERAL INDUSTRIES: A SYSTEMATIC LITERATURE REVIEW](#)

 *Sabar Sutia, Refren Riadi, Mochammad Fahlevi, Muhammad Istan, Sutresna Juhara, Rudy Pramono, Agus Purwanto, John Tampil Purba, Ashiong Parhehean Munthe, Juliana*


SRP. 2020; 11(8): 508 - 518

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.72

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#### **Review Article**

##### [Lean Six Sigma Model for Pharmacy Manufacturing: Yesterday, Today and Tomorrow](#)

 *Agus Purwanto, Sri Mukti Wirawati, Sri Ndaru Arthawati, Aris Setyo Radyawanto, Beni Rusdianto, Moch. Haris, Hayu Kartika, Saddam Rasis Rabathi, Mochammad Fahlevi, Rusman Zaenal Abidin, Danang Ary Yunanto*

SRP. 2020; 11(8): 304 - 313

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.47

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#### **Review Article**

##### [Extracellular Lipase of Malassezia as Anti Dandruff Drug Target: A Review](#)

 *Wong H. Wijaya, Kris H Timotius and Jonathan K. Wijaya.*

SRP. 2020; 11(8): 446 - 451

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.64

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##### [Nano-Herb of Meniran \(Phyllanthus niruri\) as Antibacteria against Escherichia coli](#)

 *Emy Koestanti Sabdoningrum, Sri Hidanah, Sri Chusniati, Moh. Sukmanadi, Sri Agus Sudjarwo, Sarmanu*

SRP. 2020; 11(8): 519 - 523

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2020.8.73

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#### **Review Article**

##### [Influence of the Pelvic Plexus in the Control of Urogenital Function of the Male Rat](#)

 *Suzie Yaseen Abed AL-Rahman Rababa*

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.108

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### [The Development of DIETDUCATE: An Android Based Diet Management Application to Educate Ideal Diet Recommendation](#)


 *Muhammad Iqbal, Slamet Riyanto, Ike Mardiaty A, Afriza Umami, Yohan Yuanta, Ayu Febriyatna, Qonita Rachmah*

SRP. 2020; 11(8): 460 - 466

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#### Review Article

### [COVID-19 PANDEMIC AND HOME ONLINE LEARNING SYSTEM: DOES IT AFFECT THE QUALITY OF PHARMACY SCHOOL LEARNING?](#)


 *Maman Suryaman, Yoyok Cahyono, Dadah Muliandyah, Otto Bustani, Popong Suryani, Mochammad Fahlevi, Rudy Pramono, Agus Purwanto, John Tampil Purba, Ashiong Parhehean Munthe, Juliana, Shubhi Mahmashony Harimurti*

SRP. 2020; 11(8): 524 - 530

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2020.8.74

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# MERCURY EXPOSURE FROM FISH IN THE KENJERAN BEACH AREA, SURABAYA: RESEARCH PROTOCOL

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## ABSTRACT

**Background:** One of the abundant food sources of high protein is fish. Fish can be an alternative source of protein. However, recent developments in industrialization and human activities (agriculture, plantations) that lead to degradation of environmental quality followed by ecological imbalances have created major public health problems related to the safety of fish consumed in mining areas and industrialization has occurred.

**Methods:** This study was conducted by analyzing mercury levels in raw fish (freshwater and saltwater fish) originating from the waters of the city of Surabaya. The samples used were the total population of 8 traditional markets at Kenjeran Beach in Surabaya. Fish seller recruitment was carried out using a simple random sampling technique. Seven sellers were randomly selected from each market. From each seller, one freshwater fish, and one saltwater fish was taken for laboratory analysis of mercury contamination. The fish seller's knowledge was assessed through an interview with a structured questionnaire.

**Discussion:** The purpose of this study was to measure and identify mercury contamination in fish (freshwater and saltwater fish) and to see the level of knowledge of fish sellers regarding mercury contamination in fish. Due to the different levels of knowledge for each seller. Potentially, this research can provide information and education to sellers regarding mercury contamination and obtain a map of the distribution of mercury pollution in the waters of the Kenjeran area of Surabaya.

**Keywords:** contamination; fish; heavy metal; coastal-industrial area

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## INTRODUCTION

One of the abundant high protein food sources in Indonesia is fish. However, recent developments in industrialization and human activities (agriculture, plantations) that lead to degradation of environmental quality followed by ecological imbalances have created major public health problems related to the safety of fish consumed in areas where mining and industrialization are taking place.

Food safety issues are in the spotlight because they occur more frequently and can have both short- and long-term health impacts and place a significant health burden on the population. One example is heavy metal contamination between fish (freshwater fish and saltwater fish). Consumption of contaminated fish can cause health problems in various age groups(1). A study in China found that fish consumption was significantly associated with blood mercury levels. Blood mercury levels were also found to correlate with anthropometric characteristics in children (2). Another study showed that maternal fish consumption during pregnancy has a protective effect on metabolic disorders of the child, but that increased levels of mercury in the mother's blood during pregnancy are associated with an increased risk of metabolic syndrome in the child(3). Therefore, it is important to explore the types of fish and the content of mercury contamination in fish in an area so that fish consumption can have a positive effect, by minimizing the negative effects of environmental pollution.

This research is useful to rank the level of mercury contamination among several types of food that are mostly consumed by the public and to see the level of knowledge of fish sellers regarding mercury pollution in fish. At the end of this research, establish a sufficiently safe limit from fish consumption for the community and is useful for

preventing the impact of health problems caused by exposure to food from mercury as well as providing information and education to sellers regarding mercury contamination and obtaining maps of the distribution of mercury pollution in water areas.

There is an abundance of studies to provide solid evidence of the detrimental health effects of industrial contaminants. Coastal areas are one of the areas that receive the greatest impact of pollution compared to other areas. As an industrial city located in a coastal area, the city of Surabaya has a great opportunity to experience mercury contamination.

Heavy metal contamination can cause health harm through many channels such as bioaccumulation and biomagnification in the food chain (consumption of contaminated fish), consumption of contaminated water, and daily use of surface water for washing and bathing. Consumption of fish and seafood from polluted seas is the main entry point for exposure to heavy metals in humans. Heavy metal contamination in humans has long been studied for its associated health consequences. Mercury contamination is indicated as a causative agent for several disorders including immunological, neurological, reproductive, motor, nephrological, and cardiac. Several genetic disorders such as Alzheimer's, Parkinson's, Autism, Lupus, and Amyotrophic lateral sclerosis have also been found to be mediated by exposure to heavy metals (4). Gustin et al (2017) examined the effects of methyl mercury in children at age 10 which resulted in a significant association with poor behavior of developmental neurotoxicity (5). Gump et al (2012) reported a significant association of blood mercury with systemic inflammation in children aged 9-11 years (6). Population awareness, including seller awareness, is one approach that can be taken to reduce the circulation of the

food chain from contaminated food. The increased risk of contamination from food can be caused by low awareness of the public and vendors.(7).

The purpose of this study was to measure and identify mercury contamination in fish (freshwater and saltwater fish) and to see the level of knowledge of fish sellers regarding mercury contamination in fish, to identify the potential for mercury contamination that occurs due to consumption of fishery products. The results of this study are expected to be able to reduce the risk of mercury contamination through dietary modification and nutritional behavior and can provide information and education to sellers regarding mercury contamination and obtain a map of the distribution of mercury pollution in the waters of the Kenjeran area of Surabaya.

### Methods and Design

This study used 2 groups, namely the treatment group and the control group. Saltwater fish has considered the treatment group and freshwater fish are the control group. From the two groups, the mercury levels will be determined. After conducting the survey, there were 8 traditional markets in the Kenjeran beach area of Surabaya which would be the population and samples in this study. From the 8 markets, 7 raw fish sellers were randomly selected. From each seller, 2 fishes were taken. A saltwater fish as the treatment group and a freshwater fish as the control group. Not only looking at mercury levels in fish, but research was also carried out on the knowledge of fish sellers about mercury contamination in the fish being sold.

### Objectives and hypothesis

The objective of this study is to measure and identify mercury contamination in fish (freshwater and saltwater fish) and to see the level of knowledge of fish sellers about mercury pollution in fish.

### Primary hypothesis

The hypothesis of this study is that there is mercury contamination in fish sold in the Kenjeran Beach area market.

### Secondary hypothesis

1. The presence of mercury contamination in saltwater and freshwater fish.
2. Lack of knowledge of fish sellers about mercury contamination in fish.

### Setting

This study has conducted in the waters of Surabaya, precisely in the Kenjeran Beach area. Kenjeran sub-district has an area of 14.42 km<sup>2</sup> with population of 9144 people / km<sup>2</sup>(8), kenjeran district is the largest of the waters and fisheries areas in Surabaya. In the coastal area of Kenjeran there are many populations of shellfish and fish that sold and consumed by residents of the surrounding area. Kenjeran coastal waters have an important role in the cycle of handling heavy metal pollution in fish because they are the center of waters and fisheries in the city of Surabaya. Research in three coastal areas in East Java shows that sea water in Surabaya area has the highest heavy metal content compared to other coastal areas. The content of metallothionein (MT) which is a biomarker of heavy metal accumulation in aquatic animals is also found mostly in aquatic species originating from the Kenjeran sea (9). In addition, research done by Suryono *et al.* (2019)

found higher bioaccumulation of mercury in various species of shellfish caught off the Kenjeran coast, compared to other areas (10). Apart from water quality in the sea area, groundwater quality in the Surabaya area is also vulnerable to contamination. A study in the Surabaya and Sidoarjo regions found that groundwater in these two regions contained various levels of arsenic and magnesium contamination(11). This indicates that the fish raised in fresh water in Surabaya area also has a risk of being contaminated with heavy metals.

### Target Population

The population of this research is 8 traditional markets in the Kenjeran beach area. The entire market will be sampled. From each market, 7 fish sellers who sell freshwater and saltwater fish will be selected, so that 112 fish will be tested for mercury content. In addition, sellers will be respondents who will be interviewed using a questionnaire to determine the seller's level of knowledge about mercury pollution and contamination in fish.

### Inclusion and exclusion criteria

The inclusion criteria of this study are a market in the waters of Kenjeran District, Surabaya, and the seller is a seller of raw fish sold in the Kenjeran District, Surabaya.

### Outcome

Outcomes of this study are map of distribution of the mercury pollution in the waters of Kenjeran area, Surabaya along with level of knowledge of fish sellers about mercury pollution in fish, especially the ones they sell. Map of distribution will be acquired after fish samples and processed fish products samples are being tested for mercury in Sucofindo Laboratory, Indonesia. The results of this study would be the base of qualitative study in the second- and third years regarding control and countermeasures of mercury contamination.

### Discussion

This study measure and identify mercury contamination in fish (freshwater and saltwater fish) and processed fish products and also to see the level of knowledge of fish sellers regarding mercury contamination in fish. Entry of Mercury to the body's majority comes from food, because almost majority 90% of heavy metal or toxic comes from food. Based on the research Nakoe *et al.* (2014), the average mercury contains in Nila Fish from Limboto Lake (one of the Lake in Gorontalo Province) was 0.007 mg/kg - 0.089 mg/kg that according to the SNI standard, Mercury concentration in the Nila Fish still under limitation standard  $\leq 0.5$  mg/kg(12).

This study setting is in coastal area of Kenjeran, Surabaya, Indonesia. Kenjeran coastal waters was chosen because it is the center of waters and fisheries in the city. With industrial development in Surabaya is growing rapidly, the increase in the number of these industries will always be accompanied by many environmental problems caused by these industrial activities(13). Industrial waste produced will be disposed of into Surabaya's many rivers and eventually ended up in the coastal waters in Surabaya. One of the causes of high mercury is human pollution due to the mining process that causing water pollution in the lake or river(14). Fithriyah, *et al.* (2015) stated that with the bio magnification process that works in the oceans, the levels of mercury that enter will continue to be increased in addition to the continuous addition of factory waste. The mercury that enters is then associated with the food



chain system, so that it enters the body of aquatic biota and is eaten by humans along with food taken from waters contaminated by mercury.

The primary hypothesis of this study is that there is mercury contamination in fish sold in the Kenjeran Beach area market. The secondary hypothesis of this study is that there is presence of mercury contamination in saltwater and freshwater fish and that the fish sellers are not knowledgeable about mercury contamination in fish. Junaidi *et al.* (2019) research, tell that around 10% of fish sample contained very high methylmercury concentrations(14). Research conducted by the Environmental Welfare Engineering Center in collaboration with the East Java revealed the average heavy metal content in shellfish and various types of fish in the Kenjeran Beach area for mercury levels were 11.35 ppb, copper level was 1,276.16 ppb, and lead level was 913,369 ppb(15). Based on previous studies on mercury exposure in raw fish, it was found that the concentration of mercury exposure in fish and shellfish in the Kenjeran Beach area of Surabaya was still higher ( $= 0.898$  ppm) than the normal limit allowed by WHO / FAO ( $= 0.5 - 0.8$  ppm)(16). Another study found the average content of mercury (Hg) in eggplant sea cucumbers from Kenjeran beach in Surabaya is 0.099 ppm; at medium size, namely 0.112 ppm; and the large size is 0.106. This value still meets the 2009 SNI standard, which is 1 ppm(17). In processed fish products such as sea cucumber crackers sold by Kenjeran's fishermen, the Hg concentration obtained in raw sea cucumber crackers was 0.058; 0.0149; 0.108 ppb and in cooked sea cucumber crackers was 0.078; 0.074; 0.061 ppb, still below the Indonesian National Standard's threshold (18). In research conducted in human hair, the level of consumption of marine fish originating from Kenjeran Beach has a significant relationship with Hg levels in hair in research subjects. The more often and the more a person consumes sea fish from the catch of Kenjeran Beach, the higher the Hg content in the person's head hair(19). The Hg level of the exposed group was still far below the threshold value recommended by NRC of 112 ppm and Hg levels in hair have a significant relationship with health complaints in research subjects(19). Hopefully, this research can provide information and education to sellers regarding mercury contamination and obtain a map of the distribution of mercury pollution in the waters of the Kenjeran area of Surabaya.

#### ACKNOWLEDGEMENTS

We thank all the panelists involved in this study. The researchers also extend the gratitude to Direktorat Riset dan Pengabdian Masyarakat, Deputy Bidang Penguatan Riset dan Pengembangan Kementerian Riset dan Teknologi/ Badan Riset dan Inovasi Nasional for funding this study.

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