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### Review Article

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### Review Article

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[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.30**Research Article**[Association between Glycated Hemoglobin A1c Levels with Genomic Instability in Type 2 Diabetes Mellitus Patients](#) *Huda Muhammed Muzher, Farha A. Ali Shafi, Abdul Ameer N. Ghloub Alrekabi.*

SRP. 2021; 12(1): 598 - 605

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.86**Review Article**[In Vitro, Evaluation of Antioxidant and Antibacterial Activities of New 1,2,3-Triazole Derivatives containing 1,2,4-Triazole Ring](#) *Ali Shakir Razzaq, Riyadh J. Nahi.*

SRP. 2021; 12(1): 196 - 200

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.31**Review Article**[Review on the Pharmacological and Health Aspects of Apium Graveolens or Celery: An Update](#) *Aswin Rafif Khairullah, Tridiganita Intan Solikhah, Arif Nur Muhammad Ansori, Akvyan Rafi Hidayatullah, Erwan Budi Hartadi, Sancaka Cashyer Ramandinianto, Amaq Fadholly*

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SRP. 2021; 12(1): 359 - 366

[» Abstract](#) [» PDF](#) DOI: 10.31838 / srp.2021.1.56**Research Article**[The Effectiveness of an Emotional Intelligence Promotion Program in the Emotional Intelligence of Preschool Children in Kanchanaburi Province](#) *Jatuporn Ounprasertsuk, Wanich Suksatan.*

SRP. 2021; 12(1): 613 - 617

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SRP. 2021; 12(1): 201 - 206

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---

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SRP. 2021; 12(1): 367 - 370

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.57

---

**Research Article****[Effect of Beluntas Leaf Extract \(\*Pluchea indica\*\) on Oral Mucosal Wound Healing in Terms of Density of Inflammatory Cells and Collagen](#)**

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SRP. 2021; 12(1): 618 - 622

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---

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SRP. 2021; 12(1): 371 - 383

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---

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---

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👤 *Saminan Saminan, Nirwana Lazuardi Sary, Rezania Razali, Linda Julisafrida*

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##### [E-Learning Design Based on Moodle to Develop Mathematical Communication Skills of Students](#)

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---

#### Research Article

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 *Andi Azikin, Baharuddin Thahir, Andi Masrich, Siti Zulaika, Jatnika Dwi Asri, Anya Risnawati Soerya Putri, Etin Indrayani, Yoyok Cahyono, Djuhrijjani, Fitriani, Intan Rachmina Koho, Asri Setiani.*

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#### Review Article

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SRP. 2021; 12(1): 231 - 234

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.37

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---

#### Research Article

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 Roksoliana Zozuliak-Sluchyk, Nataliia Tytova, Oleksandr Kozliuk, Halyna Salata, Nataliia Ridei, Svitlana Yashnyk, Svitlana Litvinchuk.

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#### Research Article

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#### Review Article

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 Ahmed M. Abdul Hameed, Murooj L. Altemimi, Rihab H. Al-Mudhafar, Dhefaf H. Al-Mudhafar, Najah R. Hadi

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[» Abstract](#) [» PDF](#) DOI: 10.31838 / srp.2021.1.62

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#### Research Article

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 Lina Lasminingrum, Sally Mahdiani, Dina Riana.

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✎ Khalaf F. Alsamarrai, Harith Jameel Mahdi Alsamarraie, and Mena AbdulSalam Al-Abbasi.

SRP. 2021; 12(1): 254 - 258

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.40

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✎ Lintang Dian Saraswati, Bagoes widjanarko, Johannes Hutabarat, Vivi Endar Herawati, Meiny Suzery, Apriliani Ismi Fauziah

SRP. 2021; 12(1): 668 - 674

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SRP. 2021; 12(1): 250 - 267



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👤 Iraqis Muntathar Muhsen Abusanna, Ali Falah Hassan, Amal Oleiwi Hassan, Nawres Bahaa Muhammed

SRP. 2021; 12(1): 458 - 463

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.67

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**Review Article**[Spectrophotometric Determination of Metoprolol and Atenolol by Iron \(III\) and Ferricyanide](#)

👤 Amal H. Mhemeed

SRP. 2021; 12(1): 34 - 39

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.06

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**Research Article**[Eugenol Nanoparticle Encapsulated Chitosan Enhances Cell Cycle Arrest in HeLa Human Cervical Cancer Cells](#)

👤 Happy Kurnia P, Rizq Threvisca C, Dhanang Puruhita TR, Muhammad Nazhif Haykal.

SRP. 2021; 12(1): 692 - 699

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.100

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**Review Article**[Pharmacological Insight into Possible Treatment Agents for the Lethal Covid-19 Pandemic in Kurdistan Region- Iraq](#)

👤 Diyar Salahuddin Ali, (ID), Hazha Omar Othman (ID)

SRP. 2021; 12(1): 786 - 804

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.114

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**Review Article**[Synthesis And Medicinal Attributes Of Thiazole Derivatives: A Review](#)

👤 Linda R. Abdu-Rahem, Ahmad Kh. Ahmad, Faris T. Abachi.

SRP. 2021; 12(1): 290 - 295

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.46

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**Research Article**[Evaluation of Moist Beef Jerky's \(dendeng lambok\) Nutrition as a Specific-Spiced Traditional Food at West Sumatera, Indonesia](#)

👤 Rini, Vioni Derosya, Ririn Fatma Nanda, Daimon Syukri

SRP. 2021; 12(1): 1276 - 1281

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.178

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**Review Article**

### [Study the Effects of some Neuroleptic Drugs on the Haloperidol-Induced Tardive Dyskinesia in Male Mice](#)

👤 *Huda R. Atiyah, Selman M. Selman, Alaa J. Mahrath*

SRP. 2021; 12(1): 464 - 469

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.68

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#### **Research Article**

### [Detection of HbA1c in Blood Using Diode Laser \(491\) nm](#)

👤 *Layla M.H. Al-ameri, Rawaa A. Faris, Sara J. Belal.*

SRP. 2021; 12(1): 700 - 704

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.101

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#### **Review Article**

### [Pathogenicity of Metabolites of Nematophagous Fungus Paecilomyces Lilacinus Against the Larvae of Anopheles Stephensi And Culex Quinquefasciatus](#)

👤 *Mohammed R. Annon Al- hasnawi*

SRP. 2021; 12(1): 40 - 44

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.07

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#### **Review Article**

### [Design Of Primer And Probe To Detect SNP Rs 1892901 In Fosl-1 Gene In Different Types Of Cancer In Iraqi Population](#)

👤 *Safa Ahmed Abed, Hiba Muneer Al-Khafaji.*

SRP. 2021; 12(1): 296 - 300

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.47

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#### **Review Article**

### [The Effect of Using a Suggested Sport's Diet on Increased Thyroid Secretion and Its Effect on Obesity](#)

👤 *Mohammed Nader Shalaby, Mona Mostafa Abdo Sakoury, Sherin Hussien, Wafaa Gaber Mohamed, Heba Fathy Heikal, Mentallah Ahmed Rabei, Mohamed Selim Mohamed Ahmed*

SRP. 2021; 12(1): 805 - 817

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.115

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#### **Review Article**

### [The Therapeutic Potential of Bioactive Polysaccharides in Tissue Repairing and Wound Healing](#)

👤 *Ahmed Al Qteishat, Sidgi S Hasson, Ali A. Al-Jabri*

SRP. 2021; 12(1): 470 - 479

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.69

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#### **Review Article**

### [A COMPARATIVE STUDY OF CHEMICAL COMPOUNDS AND ANTI-BACTERIAL EFFICACY OF DIFFERENT ALLIUM CEPA PLANT EXTRACTS](#)

👤 *Alaa F. Sulaiman, Wasan M. Alwan, Samir A. Salman, Entisar E. Al-Abodi*

SRP. 2021; 12(1): 45 - 48

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.08

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**Research Article**[The Influence of Nurse Performance Models Based on Knowledge Management: SECI with Caring Approach on the Quality of Nursing Services](#)

👤 *Harif Fadhillah, Nursalam Nursalam, Mustikasari Mustikasari.*

SRP. 2021; 12(1): 705 - 714

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.102

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**Review Article**[Role Of Soluble Endoglin In The Diagnosis Of Preeclampsia Severity In Iraqi Women](#)

👤 *Lamyaa Taha Muhammed, Eham Amer Ali, Ban Hadi Hameed.*

SRP. 2021; 12(1): 301 - 305

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.48

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**Research Article**[Antiangiogenic Effect of Ficus Carica Linn Leaf Extract on Total Blood Vessels, Matrix Metalloproteinase-9 Expression and Macrophages in the Chick Embryo Chorioallantoic Membrane](#)

👤 *Iwan Sahrial Hamid*

SRP. 2021; 12(1): 1282 - 1286

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.179

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**Research Article**[Health Behavior among Elderly in Huey Chinsri Municipal, Ratchaburi Province, Thailand](#)

👤 *Tipvarin Benjanirat, Jatuporn Ounprasertsuk, Wanich Suksatan, Pongsak Jaroengarmsamer, Nantiya Kantawut, Phannee Rojanabenjakun, Sasipen Krutchangthong, Panupan Sripan, Sunatcha Chaowai.*

SRP. 2021; 12(1): 715 - 719

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.103

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**Review Article**[CHARACTER DEVELOPMENT OF HEALTH SCHOOL STUDENTS THROUGH INTEGRATED FOSTERED POST ACTIVITIES IN THE DEVELOPMENT MODEL OF LEADERSHIP INNOVATION](#)

👤 *Sri Diana, Marjono, Bagyo Yanuwadi, Romy Hermawan*

SRP. 2021; 12(1): 488 - 493

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.71

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**Review Article**[The Role of Innate Immune Response And IL-6 IN Osteoarthritis Patients in Basrah Province](#)

👤 *Raghd M. Jassem, Dalia Mohammed, Hiba Abdelmageed Younis, Muhannad Maki Abdul Kareem, Israa S. Salman*

SRP. 2021; 12(1): 49 - 54

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.09

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**Review Article**[Synthesis And Characterization Of Fluorescent Schiff Bases And Their Metal Complexes From 9-Anthracenecarboxaldehy](#)

👤 *Inam hassim ibrahim, Hasan A. Hasan.*

SRP. 2021; 12(1): 306 - 314

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.41



**Research Article**[Surgical Treatment of Advanced Hypopharyngeal Cancer with Circumferential Pharyngeal Reconstruction Using a Radial Free Flap](#)

Darkhan Akhmedin, Abai Makishev, Aizhan Bekisheva, Assiya Kukanova, Ilyas Rutzhanuly, Ivan Shtefanov, Marat Mauletbayev.

SRP. 2021; 12(1): 720 - 725

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.104

**Review Article**[Ranolazine Protects the Kidney from Ischemia/Reperfusion Injury in Adult Male Rats by Modulation of Inflammatory and Oxidative Pathways and Suppression of Notch2/Hes1 signaling pathway.](#)

Lamaan M. Abbas, Rihab H. Al-Mudhafar, Dhefah H. Al-Mudhafar, Najah R. Come on

SRP. 2021; 12(1): 494 - 504

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.72

**Research Article**[Factors Affecting Food Production with Hygienic Conditions of Bangchang Housewife Group in Bangchang Community, Amphawa District, Samut Songkhram Province](#)

Phanee Rojanabenjakun, Pongsak Jareanngamsamear, Jatuporn Ounprasertsuk, Tipvarin Benjanirat, Sasipen Kruchangtong, Sunatcha Chaowai, Jirawat Sudsawat, Panupant Sripan

SRP. 2021; 12(1): 1287 - 1294

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.180

**Research Article**[Justification of Methodological Approaches to Optimizing the Assortment Portfolio of Pharmacy Organizations Using the Example of Antihistamines](#)

Andrey Borisovich Goryachev, Taisiya Ivanovna Kabakova, Victoria Viktorovna Prokopenko, Gasbulla Suleymanovich Barkaev, Natal'ya Nikolaevna Kuvshinova, Elena Yur'evna Lemeshchenko, Oleg Nikolaevich Afanas'ev, Fazu Tinamagomedovna Magomedova.

SRP. 2021; 12(1): 315 - 318

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.50

**Review Article**[Development of an Organizational Commitment Model Based on Belief on Nurse Performance](#)

Sirajudin Noor, Nursalam Nursalam, Tintin Sukartini

SRP. 2021; 12(1): 818 - 831

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.116

**Review Article**[The Levels of Acrylamide and Glycidamide as Biomarker in Smokers: An Article Review](#)

Yahdiana Harahap, Anastasia Sharon Jautan, Sunarsih.

SRP. 2021; 12(1): 726 - 732

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.105

**Research Article**[Managerial Competency Standard Program Evaluation](#)

 Danny Zulkarnaen, R. Madhakomala, Mukhtadi, Anis Eliyana, Muhammad Ali Ahmad

SRP. 2021; 12(1): 1295 - 1304

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.181

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#### Research Article

##### [Determination of Heavy Metals and Bacterial Count of Some Frequently Consumed Spices in Jordan](#)

 Sati Y. Al-Dalain, Moawiya A. Haddad, Jehad S. Al-Hawadi, Ahmad Freihat, Shereen Arabiat, Maisa M. A. Al-Qudah, Mazen A Ateyyat.

SRP. 2021; 12(1): 319 - 325

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.51

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#### Review Article

##### [Immunohistochemical Expression Of ROS-1 In Mammary Ductal Carcinoma In Correlation With Hormonal Receptor Status And Her2Neu Expression](#)

 Ameer Dh. Hameedi, Hassanien Gh. Hussein, Israa A. Hussein

SRP. 2021; 12(1): 832 - 839

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.117

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#### Research Article

##### [Increasing of Some Secondary Metabolites Production in Albizia lebeck Using Different Concentrations of Arginine in Vitro.](#)

 Hawazen H. Salih, Emad Hamdi Jassim, Maha I. Salih, Suha Fairg Hassan.

SRP. 2021; 12(1): 1018 - 1025

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.141

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#### Research Article

##### [Comparison of Dementia Knowledge and Contributing Factors between Indonesian Workers in Rural and Urban Areas](#)

 Indri Hapsari Susilowati, Susiana Nugraha, Sabarinah, Bonardo Prayogo Hasiholan.

SRP. 2021; 12(1): 733 - 736

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.106

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#### Research Article

##### [Relationship Between Motivation of Professional Activity of Security and Defense Sector Workers with Qualities and Attitudes to Different Parties](#)

 Olena Fedorenko, Victoria Dotsenko, Oleh Petruk, Viktoriia Bedan, Andriy Vikhtiuk, Olena Kudermiina, Svitlana Izbash.

SRP. 2021; 12(1): 326 - 333

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.52

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##### [Developing Individual Performance Working at Planning Extension Programs in the Context of Decentralization in Baghdad Governance](#)

 Azhaar H.M. All Bahar.

SRP. 2021; 12(1): 1026 - 1032

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.142





### Research Article

#### [Synthesis Of New Compounds Derived From Dapsone And Study Their Biological Activity](#)

👤 *Tareq K. Ibraheem, and Ziad T I Alkayar, Mohammed A M Al-badri*

SRP. 2021; 12(1): 840 - 843

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.118

### Case Study

#### [Case Study: Management of Change in Employment Services During Pandemic](#)

👤 *Mu@minati, Anis Eliyana, Dita Aditia Ismawati, Abdul Muslim, Muhammad Chamzah Abdullah, Muhammad Ali Ahmad*

SRP. 2021; 12(1): 1322 - 1327

[» Abstract](#)   DOI: 10.31838/srp.2021.1.184

### Review Article

#### [Differences in the Experience of Lecturers and Students on Distance Learning In Higher Education in Indonesia: Case Study in the Pandemic of Covid-19](#)

👤 *Slamet, Abd. Malik Karim Amrullah, Sutiah, Ali Ridho.*

SRP. 2021; 12(1): 742 - 747

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.108

### Research Article

#### [Application of Compulsory Licensing in the Context of the Covid-19 Coronavirus Pandemic](#)

👤 *Nataliia Serohina, Olena Pikhurets, Svitlana Iasechko, Elvira Yevlakhova, Stepan Lytvyn, Ivan Miroshnykov.*

SRP. 2021; 12(1): 334 - 342

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.53

### Review Article

#### [The Relevance of Green Hotel Concept from the Hoteliers Point of View after Pandemic COVID-19](#)

👤 *Diana Mutiara Lemy, Joselyn Carissa, Shella Wydia Ayumi, Venna Tamara, Rudy Pramono*

SRP. 2021; 12(1): 506 - 514

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.73

### Research Article

#### [Treatment of Hyperlipidemia Induced in Rats by Sweet Almond \(S.A.\) Watery Extract \(Prunus Amygdalus\) and Compares with Atorvastatin](#)

👤 *Mohammad S. Jadaan, Atheer A. Khashan, Omar Salim Ibrahim.*

SRP. 2021; 12(1): 1050 - 1052

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.145

### Research Article

#### [The Impact of Nifedipine on Maternal and Fetal Blood Streamon The Threat of Preterm Labor](#)

👤 *Anita Deborah Anwar, Indra Magda Tiara, Elsy Nur Anggraeni, Rizna Tyrani Rumanti, Kemala Isnainiasih Mantilidewi, Jusuf S Effendy, Prima Nanda Fauziah*

SRP. 2021; 12(1): 1328 - 1332

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.185



**Research Article**[Approaching Job Performance through the Mediation of Organizational Culture, Job Satisfaction and Career Development](#)

👤 *Wiwik Istyarini, Anis Eliyana, Ida Ayu Brahmasari, Andik Matulesy, Muhammad Ali Ahmad.*

SRP. 2021; 12(1): 1060 - 1068

» Abstract » PDF DOI: 10.31838/srp.2021.1.147

**Review Article**[Histopathological Changes In Placentas Due To Pregnancy-Induced Hypertension And Gestational Diabetes Compared With Normal Term Placenta](#)

👤 *Sawsan S. Hamzah, Ahmad Yar*

SRP. 2021; 12(1): 844 - 849

» Abstract » PDF DOI: 10.31838/srp.2021.1.119

**Review Article**[Synthesis of ZnO Nanoparticles from Azo Complexes and Study their Biological Activity](#)

👤 *Sanbul H. Jerwan, Yousif H. Khalaf, Ahmed Mishaal Mohammed.*

SRP. 2021; 12(1): 350 - 358

» Abstract » PDF DOI: 10.31838/srp.2021.1.55

**Review Article**[Roles of Nurses on Rational Drug Use with Diabetic Patients: Case Study](#)

👤 *Somsak Thojampa, Sirikanok Klankhajhon, Wuttichai Sahattecho, Orawan Pairojwoottipong, Jirapa Junbua, Sorawit Ngamsutti.*

SRP. 2021; 12(1): 748 - 752

» Abstract » PDF DOI: 10.31838/srp.2021.1.109

**Research Article**[Roasted date and barley beans as an alternative?s coffee drink: micronutrient and caffeine composition, antibacterial and antioxidant activities](#)

👤 *Mousa Tarawneh, Ahmad M. Al-Jaafreh, Hammad Al-Dal'in, Haitham Qaralleh, Moath Alqaraleh, Moayad Khataibeh.*

SRP. 2021; 12(1): 1079 - 1083

» Abstract » PDF DOI: 10.31838/srp.2021.1.149

**Research Article**[Association between Internet Usage Behavior and Self-esteem of University Students](#)

👤 *Supat Chupradit, Jirada Takham, Priyanut Wutti Chupradit*

SRP. 2021; 12(1): 515 - 519

» Abstract » PDF DOI: 10.31838 / srp.2021.1.74

**Review Article**[Nutritional Intervention Based on Moringa Leaf Flour to Prevent Stunting in First 1000 Days of Life \(1000 HPK\): Review Articles](#)

👤 *Nadimin, Muhammad Haseeb Zia, Asma Asif, Abaid Ur Rehman*


SRP. 2021; 12(1): 1222 - 1228

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.186

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#### Research Article

### [The Effect of Magnesium Supplement among Pregnant Women with Hypomagnesemia and Normal Magnesium](#)

 Dovy Djanas, Syahredi, Bobby Indra Utama, Roza Sriyanti, Syntia Ambelina, Try Genta Utama, Heri Farnas, Calvindra Leenesa, Zulfia Wahyuni, Ricvan Dana Nindrea

SRP. 2021; 12(1): 520 - 525

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.75

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#### Review Article

### [Assessment of salivary Interleukin \(IL\)-6, IL-10, Oxidative Stress, Antioxidant Status, pH, and Flow Rate in Dental Caries Experience patients in Tikrit Province](#)

 Intesar Jasim Mohammed, Entedhar Rifaat Sarhat, Marwa Abdul-Salam Hamied , Thuraia Rifaat Sarhat

SRP. 2021; 12(1): 55 - 59

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.10

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### [Low Cost Mask \(Niqab\) to Prevent COVID19 Spread in Muslim Countries](#)

 Foziah J. Alshamrani, MD, Azra Zafar, MD, Aishah Albakr MD, Ibrahim alghanimi MD.

SRP. 2021; 12(1): 753 - 758

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.110

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#### Review Article

### [Factors Influencing Medication Adherence among Patients with Hypertension: A Systematic Review](#)

 Thandar Win, Samoraphop Banharak, Wasana Ruaisungnoen


SRP. 2021; 12(1): 526 - 527

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.76

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#### Research Article

### [Underdiagnosis Does not Account for the Decrease in Dengue Cases in Bandung, Indonesia](#)

 Lia Faridah, Savira Ekawardhani, Hesti Lina Wiraswati, Nisa Fauziah, Fedri Ruluwedrata Rinawan, Wulan Mayasari, Kozo Watanabe

SRP. 2021; 12(1): 1340 - 1342

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.187

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#### Research Article

### [Mapping of Environmental Conditions and Non-Governmental Organizations in the Implementation of Community-Based Total Sanitation Program \(STBM\) in Siak River Side Settlement in Pekanbaru City](#)

 Novita Rany, Sukendi, Zulkarnain, Dedi Afandi

SRP. 2021; 12(1): 1426 - 1436

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.204

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#### Research Article

### [Pre-Clinical Study of the High Protein Food Based on Denaturated Whey Protein](#)



 Robi Andoyo, Mahani, Mega N Aini, Dwi W. Wira, Gofarana Wilar, Rudi Saprudin Darwis, Syamsul Huda, Lidya Cahyo Bawono, Nadila Rahmadhani.

SRP. 2021; 12(1): 759 - 770

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.111

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#### Review Article

[Adsorption Study Of Basic Fuchsin Dye On The Astragalus Root Surface In Al-Muthanna Province](#)

 Sahar Ismail Naji, Khawla. K. Jasim

SRP. 2021; 12(1): 850 - 857

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.120

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#### Research Article

[Biological Resources of Entomophilous Plants and Melliferous Bees in Russia](#)

 Vladimir Kulakov, Anna Brandorf

SRP. 2021; 12(1): 539 - 544

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.77

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#### Review Article

[Comparing the Biochemical Effects of Oral Isotretinoin Vs Azithromycin in The Treatment of Moderate to Severe Acne Vulgaris](#)

 Alaa Shawqi Abdulbari, Noor Mustafa Ali, Ahmed R. Abu Raghif, Nadheer A. Matloob

SRP. 2021; 12(1): 60 - 64

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.11

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[Increasing of IL-17 and IL-23 levels in Acid-Fast Bacilli Conversion of Drug Resistant Tuberculosis Patients after One Month Treatment](#)

 Sugiri Yani Jane, Loeki Enggar Fitri, Hani Susianti, Sumarno Reto Prawiro.

SRP. 2021; 12(1): 771 - 780

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.112

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#### Research Article

[Cases of Adolescent Sudden Cardiac Death During Physical Exercise: Autopsy, Histological Findings](#)

 T. Z. Zhakupova, K. E. Ospanova

SRP. 2021; 12(1): 1343 - 1348

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.188

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#### Research Article

[Treatment Satisfaction and Medication Adherence among Hypertensive Patients at Rumah Sakit Umum Daerah Labuang Baji Makassar](#)

 Rusli, Raimundus Chaliks, Neni Widiasmoro, Agust

SRP. 2021; 12(1): 545 - 550

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.78

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#### Research Article

[The Potential of Refined Tempeh Hydrolyzed Flour as a Raw Material for Functional and Natural](#)

## [Cooking Spices in Indonesia](#)

👤 *Mujianto, Wignyanto, Indarwati*

SRP. 2021; 12(1): 1437 - 1451

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.205

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### **Review Article**

## [Effect of Mobile Phones on Blood Biochemistry and General Health: A review](#)

👤 *Suad Azeez Hassan, Saad Abdulkareem Mohamed, Aya Nabeel Hameed*

SRP. 2021; 12(1): 65 - 67

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.12

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### **Research Article**

## [Comparison of Immunological Surface Marker of CD4 + Lymphocytes in Patients with Pulmonary Tuberculosis Pre- and Post-Intensive Phase of Treatment](#)

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

SRP. 2021; 12(1): 551 - 556

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.79

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### **Research Article**

## [Factors Affecting the Quality of Working Life at the College of Allied Health Sciences, Sunanandha Rajabhat University Samut Songkhram Education Center](#)

👤 *Phanee Rojanabenjakun, Jatuporn Ounprasertsuk, Pongsak Jareanngamsamear, Tipvarin Benjanirat, Sasipen Krutchangthong, Sunatcha Choawai, Thitinan Jakpet, Jirawat Sudsawat*

SRP. 2021; 12(1): 1349 - 1353

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.189

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### **Research Article**

## [Research Study of Management of Drug Related Problems \(DRPS\) in Patients with Congestive Heart Failure \(CHF\)](#)

👤 *Gemy Nastity Handayani, Nirmalasari Husain, Yessy Kurniati*

SRP. 2021; 12(1): 1452 - 1458

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.206

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### **Review Article**

## [Analysis of The Reality of Crisis Management Under the Circumstances of the COVID-19 Pandemic in Babylon Governorate: A Case Study](#)

👤 *Mina Hilal Mohammed, Bashar Abbas Al-Himyari*

SRP. 2021; 12(1): 68 - 75

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.13

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### **Research Article**

## [The Antioxidant Effect of Indonesian Propolis In Rats Induced by Anthrax Spores](#)

👤 *Dhani Redhono, Bambang Purwanto, Brian Wasita, Dono Indarto, Rahmat Setya Adji, Arie Kusumawardani, Risyia Cilmiaty*

SRP. 2021; 12(1): 557 - 562

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.80



**Research Article**[Improving Foot Peripheral Blood Circulation with Indicators of Ankle Brachial Index \(ABI\) through Diabetic Foot Spa in Diabetes Mellitus Patients of Type 2](#)

👤 Abdul Aziz Alimul Hidayat, Ricky Riyanto Iksan, Buntar Handayani, Isnayati, Rona Febriyona

SRP. 2021; 12(1): 1354 - 1357

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.190

**Review Article**[Exploring the Role of Regadenoson As an Ointment Dosage Form in Inducing Wound Healing in Mice](#)

👤 Ali Mazin Talib, Abdulkareem H. Abd, Mohammed Hussain Al-Mayahy

SRP. 2021; 12(1): 76 - 82

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.14

**Research Article**[Interleukin - 6 Relationship on Response of Effectiveness of Mindfulness Based Cognitive Therapy for Cancer in Cervical Cancer Patients](#)

👤 Cut Sheira Elnita, Heru Priyanto, Supriyadi Hari Respati, Uki Retno Budihastuti, Affi Angelia

SRP. 2021; 12(1): 563 - 569

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.81

**Research Article**[Investigating the Effects Perceived Value, Technology Adoption, the Level of Value Orientation, and Customer Satisfaction on Buyer Engagement of B2B Marketplace in Indonesia](#)

👤 Muhamad, Edi Abdurachman, Amalia E. Maulana, Pantri Heriyati, Kadek Wiweka

SRP. 2021; 12(1): 1459 - 1478

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.207

**Review Article**[Chemical Design, Synthesis And Biological Evaluation Of Mutual Prodrug Of Gabapentin With Different Types Of Phenolic And Alcoholic Antioxidants](#)

👤 Zahraa B. Mohammed and Tagreed N. Omar

SRP. 2021; 12(1): 858 - 868

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.121

**Research Article**[Pre and Postnatal Histological Changes in Eyelid and Hyaloid Artery in Rabbits \(Oryctolagus cuniculus\)](#)

👤 Ali Faris Reshag, Azhar Saleem Khalaf.

SRP. 2021; 12(1): 1084 - 1087

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.150

**Research Article**[Pluchea indica Extract as a Potential Source of Nutrition for Accelerate Wound Healing](#)

👤 Vinna Kurniawati Sugiaman, Nur Qolbiyatun Nisyah, Niki Anisa, Natallia Pranata

SRP. 2021; 12(1): 570 - 573



[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.82

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### [Imatinib Mesylate Adherence in Chronic Myeloid Leukemia Patients: Data from Middle Euphrates Region of Iraq](#)

 *Ahmed Mjali, Saja Khudhiar Abba*

SRP. 2021; 12(1): 83 - 87

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.15

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### [Mozzarella Whey Indigenous Yeasts and their Potential in Amino acid and Peptide Production through Fermentation](#)

 *Gemilang Lara Utama, Faysa Utba, Yana Cahyana, Roostita L. Balia*

SRP. 2021; 12(1): 1358 - 1366

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.191

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#### Research Article

### [Immunoassay and Genotyping of Hepatitis C virus in Ramadi City](#)

 *Noor Naji Al-Hayani, Huda Rafea Al-Alwani, Muntaha M. Hasan Al-alouci.*

SRP. 2021; 12(1): 1088 - 1093

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.151

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### [The Biomarkers Associated With Myocardial Infarction](#)

 *Suaad Abaas Lafta, Awatif Hameed Issa, Mazin Abed Hazza, Alaa Hussein Abed*

SRP. 2021; 12(1): 869 - 877

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.122

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### [Potential Effect of Jellyfish Aurelia aurita Collagen Scaffold Induced Alveolar Bone Regeneration in Periodontal Disease](#)

 *Ranny Rachmawati, Mohammad Hidayat, Nur Permatasari, Sri Widyarti*


SRP. 2021; 12(1): 1479 - 1486

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.208

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#### Research Article

### [Correlation between Leprosy Children with Nutritional Status, Personal Hygiene, BCG Vaccination History and Occupancy Density in Gresik Regency](#)

 *FRS Prakoeswa, DI Haerani, UD Ratnaasri, illustrator, Santi Martini, H Soebono, D Husada, HB Notobroto, MY Listiawan, A Endaryanto, CRS Prakoeswa*

SRP. 2021; 12(1): 574 - 578

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.1.83

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#### Review Article

### [Association of TH17 cell and IL-17A With Autoimmune Inflammatory Disorders: A Review](#)

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




SRP. 2021; 12(1): 88 - 91

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.16**Research Article**[Comparison between Dexmedetomidine and Midazolam as an Adjuvant to Lidocaine in Intravenous Regional Anesthesia for below Elbow Surgeries](#) Tarek E. Hassan, Adel R. Botros, Yaser M. Nasr.

SRP. 2021; 12(1): 1094 - 1102

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.152**Research Article**[The Effect of Nano Bentonite Supplementation in Some Carcass Characteristics of Awassi Lambs](#) Hoida Mohammed Khalaf Al-Sudani, Amara Mohammed Saleh Al-Rubeii.


SRP. 2021; 12(1): 1103 - 1113

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.153**Review Article**[The Role of Immune System and Sterilization on the Covid-19 Spread Control](#) Hazim Saad Jabbar Al-Maliki, Rana Adnan Fayez Al-jaberi, Abdul Amir H. Kadhum, Moaed E. Al-Gazally, Rahem Mahdy Rahem, Sameer H. Abbood Al Competitive

SRP. 2021; 12(1): 579 - 592

[» Abstract](#)   [» PDF](#)   DOI: 10.31838 / srp.2021.84**Research Article**[A Comparison Between The Effect Of Shisha And Cigarette Smoking On Thyroid Function Of Males](#) Muhammad Zeeshan Akram, Muqaddas Sana, Azhar Abbas, Sundus Kareem Hamzah

SRP. 2021; 12(1): 1367 - 1370

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.192**Research Article**[The 5 Dimensions of Happiness Program in Elderly: A Case Study of Samut Songkhram Elderly Clubs in Samut Songkhram Province](#) Jatuporn Ounprasertsuk, Tipvarin Benjanirat, Pornnapa Burankun, Ammara Sanpasa, Kanaphat Toamud, Thanya Jarusing, Pitakpong Jantawong

SRP. 2021; 12(1): 1487 - 1492

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.209**Review Article**[Post-Hospitalization, Levels of D-dimer, C-Reactive Protein, Ferritin, And Lactate Dehydrogenase in Recovered COVID-19 Iraqi Patients](#) Tamarah Hmed Ahmed, Noor H. Al-Mousawi

SRP. 2021; 12(1): 92 - 99

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.17**Research Article**[Potential Pharmacological Options and New Avenues Using Inhaled Curcumin Nanoformulations](#)



[POTENTIAL PHARMACOLOGICAL OPTIONS AND NEW AVENUES USING IRRADIATED CURCUMIN NANOPARTICULATIONS  
for Treatment of Post-COVID-19 Fibrosis](#)

Edward Christopher Yo, Marcello Mikhael Kadharusman, Adrian Prasetya Karman, Melva Louisa, Wawaimuli Arozal.

SRP. 2021; 12(1): 1119 - 1128

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.155

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[Assessment Of Vitamin B12, Copper And Potassium Levels In Adults Patients With Tinnitus In Hilla City ?Iraq](#)

Fatema Jassim Mohammed AL-Kanani, Ban Mahmood Shaker Al-joda, Saffa sahib Naji sultan

SRP. 2021; 12(1): 1371 - 1374

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.193

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[Early Onset Sepsis Risk Calculator and Vitamin D Level in Newborn Exposed to Premature Rupture of Membranes](#)

Helmy AS, ELMeneza SA, ELBagoury IM

SRP. 2021; 12(1): 1375 - 1380

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.194

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[Production Of ?? Amylase By Fungi Isolated From Oil-Contaminated Soil In Karbala, Iraq](#)

Alaa Abdul Hussein Kareem Al- Daamy

SRP. 2021; 12(1): 878 - 883

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.123

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**Review Article**

[Fermentation extract of Penicillium italicum and Fusarium oxysporum and a statement of its Biological Effectiveness](#)

Heyam G. Al Mousawi, Raghda Abbas Razaq

SRP. 2021; 12(1): 1493 - 1500

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.210

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**Review Article**

[Formulation And Evaluation Of Antiretroviral Drug Loaded Unsaturated Phospholipid Based Stealth Liposome](#)

Ahmed S. Abdul Jabbar, Suhair M. Ashour

SRP. 2021; 12(1): 884 - 888

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.124

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**Review Article**

[The Nature Of Dust Storms In Tikrit And Their Effect On Plants](#)

Muqdad altae, Raghad Mukdad Mahmood, Israa Salman dalas

SRP. 2021; 12(1): 1388 - 1392

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.197

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**Review Article**[Family Planning Methods Knowledge, Attitude And Usage Among Married Women In Reproductive Age In Mosul City.](#) *Nadia Hazem Saied*

SRP. 2021; 12(1): 891 - 896

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.125**Review Article**[The Effect of Follicular Fluid Supplementation on Embryo Development in Iraqi Buffalo](#) *Husamaldeen A. Alsalim, Ihsan A. Habeeb, Ahzan K. Abdulameer*


SRP. 2021; 12(1): 100 - 106

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.18**Review Article**[Prevalence Of Fungi In Clinically Suspected Cases Of Pulmonary Tuberculosis In Iraq, Wasit](#) *Hazim Muttair Hussein, Azhar Ali Sekhi, Hassan Saad Sekeb*

SRP. 2021; 12(1): 1393 - 1396

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.198**Research Article**[Evaluating The Effect Of Air Abrasive Polishing On Friction And Surface Micromorphology Of Ceramic Brackets Using Different Wires](#) *Ahmed R. Mohammed Hassan, Shahbaa A. Mohammed*

SRP. 2021; 12(1): 897 - 904

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.126**Review Article**[Effectiveness Magnetized Water On Multi-Drug Resistance \(Mdr\) Pseudomonas Aeruginosa](#) *Sarah Amir AbdalAbass, Khalid Hadi Mahdi, Hanna Salih Saba, Nebras Rada Mohammed*

SRP. 2021; 12(1): 1402 - 1405

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.200**Review Article**[Copper \(II\) and Mercury \(II\) Complexes with Schiff Base ligands from Benzidine with Isatin and Benzoine: Synthesis, Spectral Characterization, Thermal Studies and Biological Activities](#) *Hiyam Hadi Alkam, Eman Mutar Atiyah, Noor Mohammed Majeed, Wasan Mohammed Alwan*

SRP. 2021; 12(1): 107 - 115

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.19**Review Article**[Assessment Knowledge Of Pregnant Women About Tetanus Toxoid Vaccination In Mosul City"](#) *Rana Mohammed Jasim, Shaymaa Riyadh thanoon, Zainab Faisal Alzaidy, Nadia khalaf sulaiman*

SRP. 2021; 12(1): 1501 - 1505

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.211

**Research Article**[Isolation, Identification and Synthesis of Neolignans from Phoebe declinata Leaves: Molecular Modeling and Anticancer Evaluation](#)

👤 Rosmalena Rosmalena, Vivitri D. Prasasty, Fatmawaty Yazid, Emil Budianto, Berna Elya, Puspa Lotulung, Hanita Omar, Muhammad Hanafi.

SRP. 2021; 12(1): 1129 - 1141

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.156

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**Review Article**[Rheological Properties of Nanoclay-Polyethylene Composite Through Capillary Rheometry](#)

👤 Saja S. Al-Taweel, Hasan M. Luaibi

SRP. 2021; 12(1): 116 - 123

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.20

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**Review Article**[Association Of The Melatonin Receptor C Gene With Egg Production Traits In Local Iraqi Chicken](#)

👤 Israa Luay Hamdan AL-Jaryan, Walaa Salih Hassan, Muhannad Munthir AL-Rekabi

SRP. 2021; 12(1): 1406 - 1413

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.201

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**Review Article**[Comparative Chemical Study For Species Of The Family Poaceae](#)

👤 Salwah Hamza Hussein Al-hassnwy, Ruqaya Manoon HasanAl-nomani

SRP. 2021; 12(1): 905 - 920

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.127

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**Research Article**[Preparation of Healthy Mayonnaise by Using Plant and Animal Gums as Oil Replacer](#)

👤 Inas Mudhafar Khaleel Al-Aubadi.

SRP. 2021; 12(1): 1142 - 1150

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.157

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**Review Article**[High Neutrophils/ lymphocyte ratio and MPO levels associated with low expression of miRNA-146a and apolipoprotein E in Type2 diabetic patients with atherosclerosis](#)

👤 ANWAR JASIB THAABAN ALMZAIEL, NAWAL KHINTEEL JABBAR, ZAINB NAJAM AL-ABADY, REMAH ABDULHASSAN SABIT

SRP. 2021; 12(1): 124 - 130

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.21

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**Mini Review**[The Impact of Nurse Caring on the Recovery of COVID-19 Patients: A Systematic Review](#)

👤 Eni Sumarliyah, Luthfiyah Nurlaela, Andi Mariono, Dede Nasrullah, Ira Purnamasari, Idham Choliq

SRP. 2021; 12(1): 1506 - 1513

[» Abstract](#)   [» PDF](#)



**Research Article**[Preparation of Mentha Crispata Extract and Detection of its Biological Application.](#)

👤 *Afnan I. Abdulwahab, Butheina A. Hasoon, Raghad Khwater Maeah, Khalida F. Al-azawi.*

SRP. 2021; 12(1): 1151 - 1155

» [Abstract](#) » [PDF](#) DOI: 10.31838/srp.2021.1.158

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**Review Article**[Effect Of Chlordiazepoxide Oral Tablet On Oral Recurrent Bruxism, A Clinical Trial Human Study](#)

👤 *Ghadah Ali AL-Oudah, Ameer Hamdi AL-Ameedee, Ali Ameer AL-Ameedee*

SRP. 2021; 12(1): 921 - 924

» [Abstract](#) » [PDF](#) DOI: 10.31838/srp.2021.1.128

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**Research Article**[Prevalence of Oral Trichomoniasis in Dawn Syndrome Children with Gingivitis in Baghdad](#)

👤 *Hanaa Kamil Hamad.*

SRP. 2021; 12(1): 1156 - 1158

» [Abstract](#) » [PDF](#) DOI: 10.31838/srp.2021.1.159

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**Review Article**[A Chemical Study By Using GC-Mass Spectrometry Of The Peel And Seeds Of Punica Granatum L. Plant](#)

👤 *Arkan Ali Al-Tai, Taiba Falih Al-Mayyahi*

SRP. 2021; 12(1): 1414 - 1421

» [Abstract](#) » [PDF](#) DOI: 10.31838/srp.2021.1.202

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**Review Article**[Effect of Biosurfactant produced from Streptococcus thermophilus against Staphylococcus aureus and some physiological parameters in White Rats Male](#)

👤 *Batool Shakir Abed Almjlawi, Rukaibaa Ali Chechan, Uroba A. Shama*

SRP. 2021; 12(1): 137 - 148

» [Abstract](#) » [PDF](#) DOI: 10.31838/srp.2021.1.22

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**Review Article**[How Does Attitude Towards Behavior, Perceived Behavioral Subjective Norm And Control Program Of Work Unit In Patient Safety? Indonesia: A Descriptive Qualitative Study](#)

👤 *Mirrah samiyah, Usman Hadi, Widodo J. Pudjiraharjo, Nyoman Anita Damayanti, Djazuly Chalidyanto, Retno Dewi Suminar*

SRP. 2021; 12(1): 925 - 930

» [Abstract](#) » [PDF](#) DOI: 10.31838/srp.2021.1.129

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**Research Article**[The Current Situation of Anemia and Zinc Deficiency of Children Ages 6-59 Months with Anorexia WHO Examined at National Institute of Nutrition](#)

👤 *Nguyen Trong Hung, Pham Thi Thu Huong, Tran Thi Tra Phuong, Truong Tuyet Mai, Nguyen Thi Lam, Nguyen Luong Hanh, Nghiem Nguyet Thu, Nguyen Hong Truong, Le Danh Tuyen*

SRP. 2021; 12(1): 1422 - 1425



[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.203

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##### [Molecular Detection Of Klebsiella Pneumoniae Isolated From Different Clinical Source](#)

 *Boraq Abbas Abd Alwahed, Noor Saad latteef, Wathiq Abbas Hatite Al-Daraghi*

SRP. 2021; 12(1): 931 - 934

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.130

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##### [Novel oral solid self-nanoemulsifying drug delivery system \(S-SNEDDS\) of rosuvastatin calcium: Formulation, characterization, bioavailability and pharmacokinetic study.](#)

 *Adnan Burhan Qader, Ahmed Abbas Hussein*

SRP. 2021; 12(1): 137 - 148

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.23

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##### [The Urgency Of The Adolescent Breast Health Service Model Involving Puskesmas Nurses And The Role Of Uks Teachers Based On The Whatsapp Application](#)

 *Halimatussakdiah, Aprina, Reni Chairani, Ta'adi, Syamsul Firdaus.*

SRP. 2021; 12(1): 1159 - 1169

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.160

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##### [Identification Of Specific Ige In Asthmatic Patients In Iraq](#)

 *Ola Kamal, Zuhair Ibraheem ALmashhadani, Mohammed Abed Jawad.*

SRP. 2021; 12(1): 1170 - 1174

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##### [The relationship between smoking and ankylosing spondylitis on some serum biomarkers](#)

 *Hala Hussain Hadi, Eman Saadi Saleh, Mohammed Hadi Al Osami, Khulood Azeez Anber*


SRP. 2021; 12(1): 149 - 154

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.24

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##### [Riboflavin \(Vitamin B2\) Injected Vehicle Production And Filtration Process](#)

 *Sarah A. Hamood, Jabar A. Faraj, Ziad T. Aldahan, Moatz Majeed Ali.*

SRP. 2021; 12(1): 1175 - 1179

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.162

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##### [Profile Of Cleft Lip And Cleft Palate In Basrah Province South Of Iraq Between 2013-2015](#)

 *Hanaa Khazaal Jaber, Sundus Abdul Wadood, Adil G. Fadil..*

SRP. 2021; 12(1): 1180 - 1184

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.163



**Review Article**[The Effect Of Intention On The Performance Of Work Unit In Patient Safety In Indonesia: Linear Regression Analysis](#)

👤 *Mirrah samiyah, Usman Hadi, Widodo J. Pudjiraharjo, Yusti Probowati, Thinni Nurul Rochmah, Djazuly Chalidyanto.*

SRP. 2021; 12(1): 1185 - 1189

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.164

**Review Article**[Histological Development Of Ileum In New Zealand Rabbit\(Oryctolagus Cuniculus\) Embryos During Pregnancy, Childbirth And Lactation](#)

👤 *Kawthar Mohammed Nasser Abboud Al Hayani, Nedhal Ibrahim Lateef, Mahdi Saleh Shalal Al-Hiti.*

SRP. 2021; 12(1): 1190 - 1192

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.165

**Review Article**[The Phytochemical Constituent Of Capparis Spinosa L. And Phenolic Activity On Pathogenic Bacteria And Blood Parameters](#)

👤 *Ashwaq Talib Hameed, Dina Hameed Zaidan, Shaimaa Mohe Dawd.*

SRP. 2021; 12(1): 1193 - 1198

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.166

**Review Article**[Neuroprotective Effect of Telmisartan in Brain Ischemic Reperfusion Injury in Male Rats](#)

👤 *Hasan Adnan Hashim Alblesh, Ahmed Rahmah Abu Raghif*

SRP. 2021; 12(1): 155 - 163

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.25

**Review Article**[PMTOH ARTS CULTURE ACTIVITIES CAN REDUCE TRENDS OF DRUG USED BY HIGH SCHOOL STUDENTS IN BANDA ACEH](#)

👤 *T. Alamsyah, Hizir Sofyan, Heru Santosa, Hajjul Kamil*

SRP. 2021; 12(1): 164 - 169

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.26

**Review Article**[HOW WERE STRESS FAMILY AND INSR \(INSULIN RECEPTOR\) EXPRESSION IN POLYCYSTIC OVARY SYNDROME \(PCOS\) INSULIN RESISTANT IN MADURESE TRIBE?: INDONESIA](#)

👤 *Muhammad Suhron, Zakkiyatus Zainiyah*

SRP. 2021; 12(1): 170 - 175

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.27

**Review Article**[The Potency of Radiolabelled Monoclonal Antibody Anti-CD20 as A Targeted Therapy for B-cell Non-Hodgkin Lymphoma: A Review](#)

👤 *Hastono Ridwansyah, Achmad Hussein S. Kartamihardja, Muhammad Hasan Bashari, Bethy*



SRP. 2021; 12(1): 935 - 947

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.131**Research Article**[Isolation and Identification of Aspergillus spp. from Human and Sheep Respiratory Infection in Al-Qadisiyah Province](#)

👤 Riyadh Ajmi Salman, L. Dr. Zainab A. A. Al-haddad

SRP. 2021; 12(1): 948 - 952

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.132**Research Article**[Change Management and Creativity during Pandemic Covid-19 in Indonesia](#)

👤 Nadia Ashmi Atthahira, Anis Eliyana, Nurzalinar Joesah, Sudarsono, Bahagia Tarigan, Muhammad Ali Ahmad

SRP. 2021; 12(1): 953 - 959

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.133**Research Article**[Response of Cucumber Plants to PGPR Bacteria \(Azospirillum brasilense, Pseudomonas Fluorescens and Bacillus Megaterium \) and Bread Yeast \(Saccharomyces cerevisiae\)](#)

👤 Hussein Ali Salim, Ali A. Kadhum, Abbas Fadhil Ali, Uday Nayef Saleh, Nassif Hameed Jassim, Ali Rahim Hamad, Jamal Abdulrahman Attia, Jamal Jumaa Darwish, Abdulhafid Falih Hassan

SRP. 2021; 12(1): 969 - 975

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.135**Research Article**[Identification of BlaTEM and BlaSHV Genes of Extended Spectrum Beta Lactamase \(ESBL\) Producing Escherichia coli from Broilers Chicken in Blitar, Indonesia](#)

👤 Mustofa Helmi Effendi, Freshinta Jellia Wibisono, Adiana Mutamsari Witaningrum, Dian Ayu Permatasari

SRP. 2021; 12(1): 976 - 981

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.136**Research Article**[Increasing Modern Contraceptive Use among Early Marriage Partners: An Experimental Study in Rural Indonesia](#)

👤 Najib, Efa Nugroho

SRP. 2021; 12(1): 982 - 986

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.137**Review Article**[The Rate of Carbon Dioxide \(CO<sub>2</sub>\) Emission in Various Ages and Conditions of Balangeran Plant \(Shorea Balangeran\) at Ombrogenous Peatlands in Central Kalimantan](#)

👤 Usis, Sih Winarti, Sossilawaty, Fengky F. Adji, Kitso Kusin, Untung Darung

SRP. 2021; 12(1): 982 - 991

[» Abstract](#) [» PDF](#) DOI: 10.31838/srp.2021.1.137**Research Article**

[Prognostic Implications of Sokal, Hasford, and EUTOS scores on Complete Hematologic and Early](#)[Molecular Responses in Newly Diagnosed Chronic Myeloid Leukemia Patients: A Prospective Cohort Study](#)

👤 *Indra Wijaya, Fachreza Aryo Damara, Rully M. A. Roesli, Lelani Reniarti Marsaman, Muhammad Hasan Bashari*

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[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.138

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#### Research Article

[Machine Learning Methods for Predicting Tumor Volume in Rats after Termination of Complex Treatment with a Varying Dose of Cyclophosphamide](#)

👤 *Konstantin Sarin, Marina Bardamova, Mikhail Svetlakov, Ilya Hodashinsky, Evgeny Kostyuchenko, Denis Pakhmurin, Artem Slezkin, Victoria Pakhmurina, Gennadiy Mikhailchenko, Ivan Sidorov*

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[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.139

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[Characterization and Structural Properties of Glycam1 Gene of Some Domestic Animals](#)

👤 *Nevien M. Sabry, Tarek A. A. Moussa*

SRP. 2021; 12(1): 1006 - 1017

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.140

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[Study The Thermal Properties And Effect Of Acidic Solutions To Unsaturated Polyester Composite With Iron Filings](#)

👤 *Noaman Z. Sulyman, Ebtehag Z. Sulyman, Thaer Abed Hallow.*

SRP. 2021; 12(1): 1199 - 1205

[» Abstract](#)   [» PDF](#)   DOI: 10.31838/srp.2021.1.167

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[Ex-Vivo Anticancer Evaluation of Tongkat Ali Roots Extract Against Lymphocyte Cell Line of Human CML Patient](#)

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---

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# Potential Extract Ethanol Citrus Amblycarpa as a Bioinsecticide Against Aedes Aegypti Larvae

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## ABSTRACT

**Introduction:** Utilization of compounds active plant into an alternative control of mosquito when it and a front for a more hospitable environment and do not cause interference health. Kuit Limau Plant (*Citrus amblycarpa*) is local citrus from South Kalimantan which has bioinsecticide potential which can be used in mosquito control.

**Objective:** This study aims to determine the effectiveness of the ethanol extract of the Peel and *Citrus amblycarpa* leaves as natural larvicides of *Aedes aegypti* larvae.

**Methods:** An experimental study with a completely randomized design of *Citrus amblycarpa* ethanol extract (500, 1000, 2000, 3000, and 4000 ppm). The positive control used abate and the negative control used distilled water and tween 80. The number of repetitions of each concentration was three times with 25 larvae in each test glass. Larval mortality was analyzed using probit analysis at a 95% confidence level.

**Results:** Extract Peel requires a time that is shorter (5.3 hours) to kill the larvae of *Ae. Aegypti* compared with leaf extract (42.8 hours). Is not there a difference significant mortality of larvae in the group leather 4000 ppm with a group of control.

**Conclusion:** The ethanol extract of *Citrus amblycarpa* rind has potential as a larvicide for *Aedes aegypti*.

**Keywords:** Ethanol extract, Bioinsecticide, *Citrus amblycarpa*, *Aedes aegypti*

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## INTRODUCTION

Dengue hemorrhagic fever is a tropical and subtropical disease (1) (2) (3) which is transmitted through the bite of the mosquito *Aedes aegypti* or *Aedes albopictus* and is caused by the Dengue virus (4)(5) DHF cases in Indonesia that were reported in 2019 were 138,127 cases. This number increased compared to 2018 of 65,602 cases. Deaths due to dengue fever in 2019 also increased compared to 2018, from 467 to 919 deaths. The incidence rate of dengue fever in 2019 is 51.53 per 100,000 population. This figure shows an increase compared to the previous two years, namely in 2017 and 2018 when the Incidence Rate of DHF was 26.1 and 24.75 per 100,000 population (6). The condition of the occurrence of dengue fever which is evident encourages the need to control the *Aedes aegypti* mosquito. One method that can be done to break the cycle and kill mosquito larvae is to use insecticides (Susilowati, Darmanto, and Aminah, 2018). The continuous use of synthetic insecticides (temephos (abate), malathion, cypermethrin, lambdasihalothrin, and deltamethrin) against the mosquito vector *Aedes aegypti* causes resistance to mosquitoes (8) (9), bioactive properties that are difficult to degrade in nature can pollute the environment, the toxic substances in synthetic insecticides will also have an impact on human health problems (10) (Susilowati, Darmanto, and Aminah, 2018). Natural larvae are an alternative in controlling mosquitoes by utilizing plants that are more environmentally friendly so that they can reduce the use of synthetic insecticides and anticipate negative impacts on health (11).

There are 2,400 species of bioinsecticide-producing plants in Indonesia that are toxic to insects (12). One of the local and abundant plants in the South Kalimantan Region, Indonesia with potential as a bioinsecticide against *Aedes aegypti* is the *Citrus amblycarpa* plant. This plant has active secondary metabolites such as flavonoids, tannins,

saponins, alkaloids (13) (14). The fresh extract of *Citrus amblycarpa* fruit Peel has been shown to kill *Aedes aegypti* instar III larvae in just 7 (seven) hours in all concentrations (15). This study aims to determine the effectiveness of the ethanol extract of *Citrus amblycarpa* in killing *Aedes aegypti* larvae.

## MATERIALS AND METHODS

This research is experimental research with a completely randomized design. In this study, various concentrations of the ethanol extract of the Peel and *Citrus amblycarpa* leaves were used, namely 500 ppm, 1000 ppm, 2000 ppm, 3000 ppm, and 4000 ppm. The positive control used abate and negative control used distilled water and Tween 80. The number of repetitions of each concentration was three times. The number of larvae in each test glass was 25 according to WHO standards.

### Provision of *Citrus amblycarpa* samples

A sampling of *Citrus amblycarpa*, which are local oranges typical of South Kalimantan, were taken in several places in South Kalimantan. Samples are taken and picked directly from the farmers' plantations to maintain its freshness. The leaves and peel are sorted then cleaned of dirt by washing with clean water, drained and spread on a newspaper so that the water is absorbed, weighed as much as 2.5 kg wet weight, aerated for 7 (seven) days by placing it in a place protected from the sun. This activity will be carried out at the Basic Laboratory of the Islamic University of Kalimantan, Banjarmasin, Indonesia.

### Ethanol extract preparation

The ethanol extract was made at the Laboratory of Basic Medicine, Faculty of Veterinary Medicine, Airlangga University. The dried leaves and Peel of the *Citrus amblycarpa* are then mashed to form a powder. One kg of leaf and Peel *Simplicia* was macerated with ethyl alcohol p.a solvent for three days, filtered every day and the

filtrate was collected and evaporated using a rotary evaporator with a decrease in pressure until a dry extract was obtained.

**Larvicide Testing**

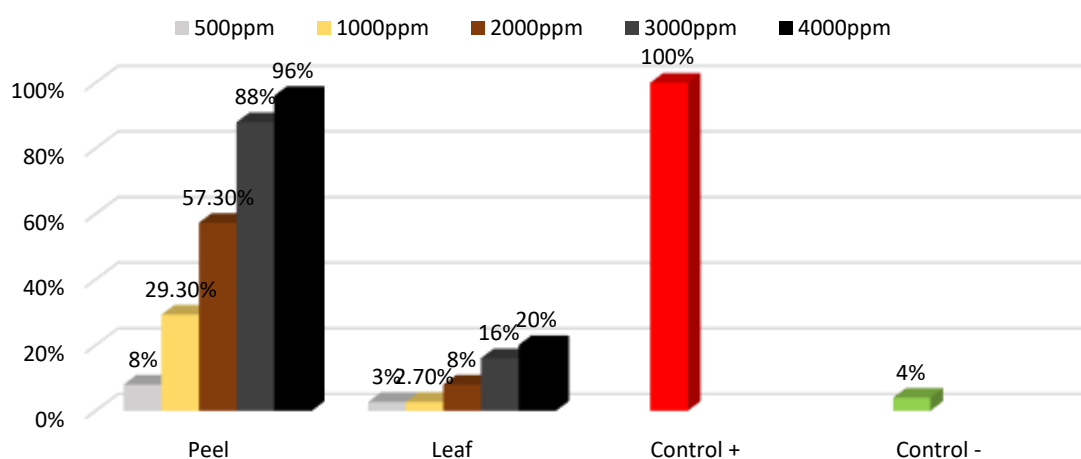
The experimental animal used was the third instar larvae of the *Ae. aegypti* results from rearing in the Entomology Laboratory of the Indonesian Tanah Bumbu Research Institute for 900 instars III larvae. The count of the dead larvae was carried out every hour for 24 hours of immersion, recorded in tabular form. The data obtained were analyzed statistically using the ANOVA test to determine the difference in larva mortality between each group and Probit analysis to determine the killing power of Peel extract and Citrus amblycarpa Leaf against Aedes

*aegypti* instar III larvae expressed in Lethal Time (LT<sub>50</sub> and LT<sub>90</sub>).

**RESULTS AND DISCUSSION**

**Comparison of the Effectiveness of Citrus amblycarpa Peel and Leaf Extract**

Graph 1 shows the comparison of mortality of *Aedes aegypti* larvae after 24 hours of treatment. The mortality of larvae with ethanol extract of Citrus amblycarpa leaves was higher than that of larvae with ethanol extract of Citrus amblycarpa leaves. Larvae mortality in the control group (+) showed 100% larval mortality while in the control group (-) there was 4% larvae mortality.



**Graph 1. Comparison of Larvae Mortality**

**Probit Analysis**

Table 1 shows the results of the probit analysis to calculate the Lethal Time of the ethanol extract of Citrus amblycarpa leaves. LT<sub>50</sub> shows the time taken to kill 50% of larvae. At

a concentration of 4000 ppm, it takes 5.3 hours to kill 50% of larvae and it takes 13.2 hours to kill 90% of larvae. In the control + group, it took 3.2 to kill 50% of larvae, and it took 5 hours to kill 90% of larvae.

**Table 1.** Value of LT<sub>50</sub> and LT<sub>90</sub> Mortality of *Aedes aegypti* Larvae Instar III Treatment Group Ethanol Extract Citrus amblycarpa Peel.

Concentration	LT <sub>50</sub> (hour)	95% CI		LT <sub>90</sub> (hour)	95% CI	
		Min	Maks		Min	Maks
500 ppm	402.8	127.4	96x10 <sup>4</sup>	5,775	598.1	40x10 <sup>9</sup>
1000 ppm	46.8	36.5	65.3	337.7	189.1	917.5
2000 ppm	18.3	15.8	20.8	78.0	63.1	112.1
3000 ppm	8.3	7.0	9.3	25.8	23.5	28.9
4000 ppm	5.3	4.4	6.1	13.2	11.8	14.7
Kontrol +	3.2	2.1	3.8	5.0	4.3	5.8
Kontrol -	44x10 <sup>3</sup>	1x10 <sup>3</sup>	58x10 <sup>15</sup>	15x10 <sup>6</sup>	3x10 <sup>4</sup>	8x10 <sup>27</sup>

Table 2 shows the results of the probit analysis to calculate the Lethal Time of the ethanol extract of Citrus amblycarpa leaves. LT<sub>50</sub> shows the time taken to kill 50% of larvae. At a concentration of 4000 ppm, it takes 42.81 hours to kill

50% of larvae and 136.49 hours to kill 90% of larvae. In the control + group, it took 3.19 hours to kill 50% of larvae, and it took 4.98 hours to kill 90% of larvae.

**Table 2.** Value of LT<sub>50</sub> and LT<sub>90</sub> Mortality of *Aedes aegypti* Larvae Instar III Treatment Group of Citrus amblycarpa Leaves Ethanol Extract

Concentration	LT <sub>50</sub> (hour)	95% CI		LT <sub>90</sub> (hour)	95% CI	
		Min	Maks		Min	Maks
500 ppm	1.692	253	2x10 <sup>9</sup>	35.966	1.529	1x10 <sup>15</sup>
1000 ppm	1.695	229	2x10 <sup>8</sup>	29.532	1.226	4x10 <sup>12</sup>

2000 ppm	74,1	46,8	408,8	229,9	96,4	6.216
3000 ppm	43,9	36,2	60,5	119,9	80,7	241,7
4000 ppm	42,8	35,4	56,6	136,5	92,2	261,3
Kontrol +	3,2	2,1	3,8	4,9	4,3	5,8
Kontrol -	$44 \times 10^3$	$1 \times 10^3$	$58 \times 10^{15}$	$15 \times 10^6$	$3 \times 10^4$	$8 \times 10^{27}$

Prevention of the spread of DHF can be done in various ways, but until now the most effective way is to break the chain of transmission through vector control. Control that has been done a lot is by carrying out chemical control, namely by using synthetic insecticides. Synthetic insecticides work more effectively and quickly than biological and physical controls. However, repeated and long-term use can cause poisoning to humans and livestock, pollute the environment, and cause insect resistance.

Another alternative that can be used to control the dengue mosquito vector with a more environmentally friendly method is to use vegetable insecticides. Vegetable insecticides can kill or interfere with pests and diseases through a unique way of working, namely through a combination of various methods or singly. (16). Secondary metabolite compounds from plants are an alternative to insecticides that have a toxic effect on insects but have no side effects and are relatively safe for the environment and human health because they have a small risk. (17) (18). The use of natural insecticides from plants is an alternative to current insecticides, as well as vector control in the future (19).

This study aims to determine the effectiveness of the ethanol extract of the skin and leaves of Citrus amblycarpa in killing Aedes aegypti larvae. The larvicidal activity test was carried out using 25 larvae with their respective concentrations in the ethanol extract of the skin and Citrus amblycarpa leaves starting from a concentration of 500 ppm, 1000 ppm, 2000 ppm, 3000 ppm, and 4000 ppm. The solvent media used were aquadest and tween 80. The addition of Tween 80, in this case, served to increase the solubility of the ethanol extract of the skin and Citrus amblycarpa leaves in water. Extracts and fractions were tested against larvae of the Aedes aegypti mosquito, instar III, the selection of the third instar as the test phase because the larvae are active foraging and their morphological shape is more perfect than instar I and II larvae. (20). The positive control used in this test was temephos 0.01gr / 100ml, while the negative control used in this test was aquadest and tween 80. The results of the larvicidal activity test can be seen in Figure 1.

This study used various concentrations of the ethanol extract of the skin and Citrus amblycarpa leaves that were tested in each group of larvae with 3 times the observed repetition for 24 hours of observation. The mortality of test larvae increased with increasing concentration. This proves that the higher the concentration and the longer the exposure time, the higher the mortality of larvae. This research is in line with the results of research (21) that the increasing the concentration of the ethanol extract of kirinyuh leaves, the toxic substances contained in the larva's living media also increase so that the number of toxic substances that enter the larva's body also increases so that the larvae it's easier to experience death. The high mortality rate of test larvae can be caused by the presence of chemical compounds in this extract that play a role in biological activity in larval growth and development. The results of the study (15), also stated that at a concentration of 4.0 ml/100ml and 5.0 ml/100ml had 100% death after 6 hours of measurement, with an  $LT_{50}$  value of 5.0%

concentration was 2.58 hours and an  $LT_{99}$  value. is 5.86 hours. So, from the results of the probit lethal time and lethal concentration tests, it was concluded that the greater the concentration is given and the longer the treatment time, it could increase the number of Aedes aegypti instar III larvae that died with the condition that the larvae were seen experiencing convulsions and bending the body.

The ability of the ethanol extract of Citrus amblycarpa peel to affect the mortality of Aedes aegypti larvae is due to the presence of certain active ingredients such as terpenoid / free steroid compounds, polyphenols, and saponins (22). Saponins are compounds that are included in terpenoid compounds. The activity of these saponins in the insect's body is to bind free sterols in the digestive tract of food where the sterol itself is a substance that functions as a precursor to the hormone ecdysone so that by decreasing the number of free sterols in the insect's body it will disrupt the process of skin change (molting) in insects. (23). Saponin compounds have the ability to damage cell membranes so that they can cause corrosion on the walls of the larvae digestive tract as stomach poison (24). The results of GC-MS shows the main components of the ethanol extract of citron biscuits are compounds 2H-1-Benzopyran-2-one, known as coumarin compound (25). Coumarin is a secondary metabolic compound from the phenolic compound group which generally comes from higher plants and is rarely found in microorganisms. Coumarin can be found in almost all parts of plants from roots, stems, leaves, flowers, and fruit (26). Coumarin compounds are known for several pharmacological properties including insecticidal activity. The results of research (27), coumarin with a content of 27.7% is a class of compounds contained in the essential oil of lime peel (Citrus aurantifolia). This compound has the potential as a mosquito larvicide (28) (29). One of the chemical components contained in the Citrus sinensis plant is coumarin which has biological activity as an insecticide (30) and is highly toxic to insects (31). This compound is very toxic to M. persicae aphids with a value ( $LC_{50(90)}$ ) values of  $1.3(1.9) \text{ mg L}^{-1}$  (32). One of the compound components of soursop (A. muricata) leaf and seed extract is that coumarin has the potential to be used as a vegetable pesticide to control cheap and environmentally friendly pest attacks. (33).

The ability of the ethanol extract of Citrus amblycarpa leaves to affect the mortality of Aedes aegypti larvae is due to the presence of certain active ingredients such as terpenoids / free steroids, flavonoids, polyphenols, and saponins. (14). Flavonoid compounds are one of the toxic compounds for insecticides because of their ability to enter the larva's body through the respiratory system and cause weakness in the nerves. (34). The body position of the larvae that changes from normal can also be caused by flavonoid compounds due to how they enter through the siphon, causing damage so that the larvae have to align their position with the water surface to make it easier to take oxygen (35). Flavonoids have an antifeedant action by inhibiting the taste receptors in the mouth area of the larvae, which will result in the larvae failing to get a taste stimulus, so the larvae are unable to recognize the food

around them. The low feeding activity of larvae causes the energy for larval development to decrease so that the growth process is also inhibited.

The results of the study (36) show that the ethanol extract of cassava leaves (*Manihot utilissima* Pohl) with the chemical compounds of saponins and flavonoids has *Aedes aegypti* larvicidal activity with an LC<sub>90</sub> value of 2,613% and larvicidal activity of ethanol extract of cassava leaves at a concentration of 3% and 3.5%. There was no significant difference in *Aedes aegypti* larvae compared to temefos. The GC-MS results showed that the main component of the Citrus amblycarpa leaf ethanol extract was Maragenin I compound (14). Maragenin I is a triterpenoid compound derivative (37) (38). Maragenin I compounds can control insect growth and have potential as an insecticide (39). This compound is a derivative of the triterpenoid/steroid class, so it can be concluded that this compound has the potential as a biopesticide, is toxic to the *Aedes aegypti* mosquito. (40).

The results of this study also showed a comparison of the effectiveness of an ethanol extract from the Citrus amblycarpa plant on its ability as a vegetable larvicide to kill *Aedes aegypti* larvae. The difference is seen from the number of larvae deaths, with the largest concentration of treatment, namely 4000 ppm, the ethanol extract of Citrus amblycarpa skin is more effective in killing larvae with a mortality percentage of 96%, while the ethanol extract of Citrus amblycarpa leaves only kills larvae with a mortality percentage of 17.3%. This is in line with Jubaedah's research (2020), based on a literature study of several types of citrus plants based on chemical compounds that have the potential to be natural larvicides of *Aedes aegypti*, with the highest potential found in the skin of sweet orange (*Citrus aurantium*) fruit compared to other parts. The use of the ethanol extract of the skin and Citrus amblycarpa leaves has the potential to become a natural larvicide and in the future, it can be applied to the community as a substitute for the use of chemical larvicides in killing *Aedes aegypti* larvae, but before application, it is necessary to do more in-depth studies and further research related to other plant extract formulations that can synergize with Citrus amblycarpa plant is like from the leaves which are indeed very small percentage in killing *Aedes aegypti* larvae.

## CONCLUSION

Peel Extract can kill *Aedes ae* Larvae. Up to 96%. Bark extract requires less time and concentration to kill *Ae* larvae. *Aegypti* compared to Leaf Extract. There was no significant difference in larval mortality in the 4000 ppm skin group and the control group. The ethanol extract of Citrus amblycarpa skin has potential as a larvicide for *Aedes aegypti*.

## CONFLICT OF INTEREST STATEMENT

We declare that we have no conflicts of interest.

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