

BAB 7

SIMPULAN DAN SARAN

7.1 Simpulan

Berdasarkan data-data yang telah diperoleh dari hasil penelitian ini dapat disimpulkan bahwa, terdapat efek hepatoprotektor pada pemberian ekstrak buah jujube merah kering terhadap gambaran sel nekrosis yang telah diberikan *acetaminophen* dosis tinggi.

7.2 Saran

Berdasarkan hasil penelitian yang telah berlangsung, peneliti memberikan saran yang dapat dilakukan untuk penelitian berikutnya yaitu:

1. Dilakukan penelitian lanjutan tentang pemberian ekstrak buah jujube merah kering untuk mengetahui efek toksisitasnya.
2. Dilakukan penelitian lanjutan tentang pemberian ekstrak buah jujube merah kering terhadap efek hepatoprotektor dengan menggunakan bagian lain seperti biji atau daun dari buah jujube merah kering.

DAFTAR PUSTAKA

1. Barrett K.E., & Barman S.M., & Brooks H.L., & Yuan J.J.(Eds.). *Ganong's Review of Medical Physiology*. McGraw Hill; 2019.
2. World Health Organization. *Hepatitis*. 2021. Available at: <https://www.who.int/news-room/fact-sheets/detail/hepatitis-b>.
3. Ramadhani F, Suryani D. *Comparison of the Effectiveness of Hepatoprotectors of Black Cumin Extract and Tenulawak Extract in SGOT AND SGPT Induced by Paracetamol*. JIMK: Jurnal Ilmiah Mahasiswa Kedokteran Indonesia, 2020,8(2).
4. Huang W, Wang Y, Jiang X et al. *Protective Effect of Flavonoids from Ziziphus Jujuba cv. Jinsixiaozao Against Acetaminophen Induced Liver Injury by Inhibiting Oxidative Stress and Inflammation in Mice*. *Molecules*; 2017,22(10).
5. Merdana I, Watiniasih N, et al. *The Effect of Ethanol Extract Mymercodia pendans on Paracetamol-Induced Hepatotoxicity in White Rats*. IOP: Conference Series: Earth and Environmental Science , 2019, 9(2).
6. Cui Dongmei. *Atlas of Histology With Functional and Clinical Correlations*. Lippincott Williams & Wilkins; 2019.
7. World Health Organization. *Key Technical Issue of Herbal Medicines With Reference to Interaction With Other Medicines*; 2021. Available at: <https://www.who.int/publications/i/item/9789240019140>.
8. Liu M, Wang J, Wang L, Liu P, Zhao Z, Yao S, Stanica F et al. *The Historical and Current Research Progress on Jujube—A Superfruit for the Future*. *Horticulture Research*; 2018, 7:119.
9. Wang C, Cao J, Jiang W. *Effect of The Drying Method on Browning of Flesh, Antioxidant Compounds and Antioxidant Capacity of Chinese Jujube (Ziziphus Jujuba Mill.) Fruit*. New Century Health Publishers; 2016, 14(2).
10. Reche J, Almansa Soledad M, Hernandez F et al. *Physicochemical and Antioxidant Capacity of Jujube (Ziziphus jujuba Mill.) at Different Maturation Stages*. *Agronomy*; 2021,12(1).
11. Mamari Al H H. *Phenolic Compounds: Classification, Chemistry, and Updated Techniques of Analysis and Synthesis*. IntechOpen; 2021.
12. Xue X, Zhao A, Wang Y, Ren H et al. *Composition and Content of Phenolic Acids and Flavonoids among the Different Varieties, Development Stages, and Tissues of Chinese Jujube (Ziziphus jujuba Mill.)*. *Plos One*; 2021,14(10).
13. Lee Eun J, Yun Hyun J, Lee Ran A et al. *Volatile components and sensory properties of jujube wine as affected by material preprocessing*. *International Journal of Food Properties*; 2018, 30(8).

14. Patil M V, Masand N. *Anticancer Potential of Flavonoids: Chemistry, Biological Activities, and Future Perspectives*. Elsevier; 2019.
15. Yan min, Wang Yan, Pu Yunfeng et al. *Physicochemical and Antioxydant Activity of Fruit harvest From Eight Jujube (Ziziphus Jujuba Mill.) Cultivars At Different Development Stages*. Scientific reports; 2022, 12(2272).
16. Rajaei A, Salarbashi D, Asrari N et al. *Antioxidant, antimicrobial, and cytotoxic activities of extracts from the seed and pulp of Jujube (Ziziphus jujuba) grown in Iran*. Food Science and Nutrition; 2021, 9(2).
17. Song S, Huang X, Liu Y, Zhang Q. *Drying Characteristic and Quality Analysis of Hot Air-assisted Radio Frequency and Hot Air Drying of Jujube (Ziziphus Jujube Mill.)*. Engenharia Agricola; 2021.
18. Bao T, Hao X, Shishir M et al. *Cold plasma: An emerging pretreatment technology for the drying of jujube slices*. Food Chemistry; 2021.
19. Drake L, Vogl Wayne A, Mitchell W.M.A. *Gray Dasar Dasar Anatomi*. 2e. Elsevier; 2019.
20. Hall E John. *Guyton dan Hall Buku Ajar Fisiologi Kedokteran*. Edisi 13. Elsevier; 2019.
21. Katzung G Bertram. *Basic and Clinical Pharmacology*. Edisi 14. Lange Medical Book; 2018.
22. Montemayor Delgado C, Perez Cordero P, Aranda Salazar R et al. *Models of Hepatoprotective Activity Assessment*. Elsevier; 2018, 23(4).
22. Wang R, Tang R, Li B et al. *Gut microbiome, liver immunology, and liver diseases*. Cellular and Molecular Immunology; 2021, 18(1).
23. Duo L, Shi X, He X et al. *Macrophage Phenotype and Function in Liver Disorder*. Frontiers in Immunology; 2020.
24. Eroschenko P Victor. *Atlas Histologi diFore Dengan Fungsional*. Edisi 12. Lippincott Williams & Wilkins; 2015, 171 p.
25. Mescher L Anthony. *Janqueira's Basic Histology Text and Atlas*. Edisi 14. Mc Graw Hill Education; 2016, 295 p.
26. Aster Abbas Kumar. *Robbins Basic Pathology*. Edisi 9. Elsevier; 2013, 10 p.
27. Fishman P Alfred, Elias A Jack, Grippi A Michael et al. *Pulmonary Diseases and Disorders*. Vol 1 & 2. Mc Graw Hill Medical; 2013, 488 p.
28. Dong V, Nanchal R, Karvellas J C. *Pathophysiology of Acute Liver Failure*. Nutrition in Clinical Practice; 2019, 17(12).
29. Habib S, Shaikh OS. *Drug-induced acute liver failure*. Clin Liver Dis; 2017, 21(1).

30. Wu H, Vu M, Dhingra S et al. *Obliterative Portal Venopathy Without Cirrhosis Is Prevalent in Pediatric Cystic Fibrosis Liver Disease*. *Clinical Gastroenterology and Hepatology*; 2019, 17(10).
31. Agverianti T, Muhartono, Nisa Khairun. *Effect of Giving Extracts Etanol Galangal Rhizome (Alpinia Galanga) Against Heart Histopathologi Description Mice*. *JIMKI*; 2019, 7(2).
32. siswadi, Saragih S Grace. *Acute Toxicity of Sterculia quadrifida R.Br Bark Ethanol Extract on Sprague Dawley Rats*. *Traditional Medicine Journal*; 2018, 23(2).
33. Arifuddin, Aswiyanti Asri, Elmatris. *Effect of Vitamin C Administration on Histopathological Appearance of Wistar Rats Exposed to Lead Acetate*. *Jurnal Kesehatan Andas*; 2016, 5(1).
34. Zhu bo Jun, Yang Xin Jian, Nian Qiong Nian et al. *Pharmacokinetics of Acetaminophen and Metformin Hydrochloride in Rats After Exposure to Simulated High Altitude Hypoxia*. *Frontiers in Pharmacology*; 2021, 18(6).
35. Kim J, Choi M, Jeong J et al. *Effect of probiotics on pharmacokinetics of orally administered acetaminophen in*. *Drug Metabolism and Disposition*. 2018, 46(2).
36. Nguyen N, Du K, Akakpo J et al. *Mitochondrial protein adduct and superoxide generation are prerequisites for early activation of c-jun N-terminal kinase within the cytosol after an acetaminophen overdose in mice*. *Toxicology Letters*; 2021, 338 p.
37. Rimmington F. *Pharmacokinetics and pharmacodynamics*. *Southern African Journal of Anaesthesia and Analgesia*; 2020, 26(6).
38. Ross J, Holstege C. *Comment on 'effects of acetaminophen on risk taking*. *Social cognitive and affective neuroscience*. 2021, 16(5).
39. Kudrna J, Hnilick F, Kubes J et al. *Effect of acetaminophen (Apap) on physiological indicators in lactuca Sativa*. *Life*; 2020, 10(11).
40. Wowor M, Loho L, Lintong P. *Histopathological description of the liver of Wistar rats given red dragon fruit juice (Hylocereus polyrhizus) and paracetamol*. *Jurnal e-Biomedik*; 2018, 6(1).
41. Awan A, Akhtar M, Anjum I et al. *Hepatoprotective effect of Ziziphus oxyphylla Edgew in paracetamol-induced hepatotoxic rat model*. *Pakistan journal of pharmaceutical sciences*; 2020, 33(5).
42. Punvittayagul C, Chariyakornkul A, Sankam P et al. *Inhibitory effect of thai purple rice husk extract on chemically induced carcinogenesis in rats*. *Molecules*; 2021, 26(2).
43. Wali A, Ali S, Rashid S et al. *Attenuation of oxidative damage-associated hepatotoxicity by piperine in CCl4-induced liver fibrosis*. *Journal of King Saud University – Science*; 2021, 33(8).

44. Fadaei H, Mirhosseiniardakani S, Farajzadeh A et al. *Aqueous-alcoholic Ferulla extract reduces memory impairments in rats exposed to cadmium chloride*. *Brain and Behavior*; 2021, 11(8).
45. Almahdy, Azlin Nur, Arifin H et al. *Propolis Hepatoprotector Effect on Liver Damage of White Mice Induced by Valproic Acid*. *Journal of Pharmaceutical Sciences and Medicine (IJPSM)*; 2018, 3(8).
46. Tan Si, Tang J, Shi W, Wang Z et al. *Effects of three drying methods on polyphenol composition and antioxidant activities of Litchi chinensis Sonn*. *Food Sci Biotechnol*; 2019, 21(8).
47. Komite etik penelitian dan pengembangan Kesehatan nasional kementerian Kesehatan RI. *Pedoman dan Standar Etik Penelitian dan Pengembangan Kesehatan Nasional*. Lembaga Penerbit Balitbangkes; 2021.
48. Silvani Nadia F. *Effect of Star fruit Extract as an Antioxidant on Hepar Histopathological Description*. *Majority*; 2019, 8(1).