

BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan kajian literatur pada 12 artikel ilmiah terkait efektivitas dan efek samping penggunaan Vonoprazan terhadap pasien yang terinfeksi *Helicobacter pylori* dapat disimpulkan bahwa:

1. Vonoprazan dengan rentang dosis 20-40 mg yang diberikan selama 7-14 hari lebih efektif secara signifikan baik dalam kombinasi *dual*, *triple* atau *quadro therapy* dibandingkan dengan PPI dalam eradikasi *Helicobacter pylori*.
2. Dua artikel melaporkan bahwa kejadian efek samping obat yang terjadi pada PPI lebih tinggi dibandingkan Vonoprazan sedangkan sisa artikel lainnya melaporkan bahwa efek samping obat yang terjadi antara PPI dan Vonoprazan hampir sama sehingga Vonoprazan aman digunakan untuk penggunaan jangka panjang.

5.2 Saran

1. Perlu dilaksanakan meta-analisa untuk melihat signifikansi hasil dari beberapa penelitian dengan karakteristik maupun luaran hasil yang sama agar memperoleh paduan data secara kuantitatif mengenai efektivitas dan efek samping penggunaan terapi Vonoprazan.
2. Perlu dilakukan penelitian lebih lanjut mengenai efektivitas Vonoprazan pada populasi non-Asia karena tempat penelitian dari sebagian artikel pada hasil penelitian dilakukan di Jepang.

DAFTAR PUSTAKA

- Abdullah, S. 2015, Efficient Searching Strategies in Pubmed, *Pakistan Oral & Dental Journal*, **35(2)**: 346–350.
- Anthony L. Mescher. 2013, *Junqueira's Basic Histology* (13th Edition), Mc Graw Hill, New York.
- Ashida, K., Honda, Y., Sanada, K., Takemura, Y., and Sakamoto, S. 2019, The Safety and Effectiveness of Vonoprazan-Based *Helicobacter pylori* Eradication Therapy; A Prospective Post-Marketing Surveillance, *Expert Opinion on Drug Safety*, **18(12)**: 1255–1261.
- Astruc, B., Jenkins, H., and Jenkins, R. 2017, Effect of Therapeutic and Supratherapeutic Doses of Vonoprazan on The QT/QTc Interval in A Phase I Randomized Study in Healthy Subjects, *Clinical and Translational Science*, **10(3)**: 208–216.
- Balendra, V., Amoroso, C., Galassi, B., Esposto, J., Bareggi, C., Luu, J., Scaramella, L., and Ghidini, M. 2023, High-Salt Diet Exacerbates *Helicobacter pylori* Infection and Increases Gastric Cancer Risks, *Journal of Personalized Medicine*, **13(9)**: 1325.
- Blunt, C.J. 2015, *Hierarchies of Evidence in Evidence-Based Medicine*, The London School of Economics and Political Science, London.
- Bondan, P. 2021, Diet pada Penyakit Divertikulitis, *Journal of Nutrition and Health*, **9(1)**: 39 – 43.
- Brito, B. B., Da Silva, F. A. F., Soares, A. S., Pereira, V. A., Santos, M. L. C., Sampaio, M. M., Neves, P. H. M., and De Melo, F. F. 2019, Pathogenesis and Clinical Management of *Helicobacter pylori* Gastric Infection, *World Journal of Gastroenterology*, **25(37)**: 5578–5589.
- Bunchorntavakul, C., and Buranathawornsom, A. 2021, Randomized Clinical Trial: 7-Day Vonoprazan-Based Versus 14-Day Omeprazole-Based Triple Therapy for *Helicobacter pylori*, *Journal of Gastroenterology and Hepatology*, **36(12)**: 3308–3313.

- Chew, C. A., Lye, T. F., Ang, D., and Ang, T. L. 2017, The Diagnosis and Management of *Helicobacter pylori* Infection in Singapore, *Singapore Medical Journal*, **58(5)**: 234–240.
- Chey, W. D., Leontiadis, G. I., Howden, C. W., and Moss, S. F. 2017, ACG Clinical Guideline: Treatment of *Helicobacter Pylori* Infection, *Official Journal of The American College of Gastroenterology ACG*, **112(2)**: 212 – 239.
- Chey, W. D., Mégraud, F., Laine, L., López, L. J., Hunt, B. J., and Howden, C. W. 2022, Vonoprazan Triple and *Dual therapy* for *Helicobacter pylori* Infection in The United States and Europe: Randomized Clinical Trial, *Gastroenterology*, **163(3)**: 608–619.
- Chiu, Y. T., Lee, F. J., Kuo, C. Y., Lin, Y. C., Liang, K. S., Tseng, L. W., Chen, Y. T., and Chang, C. Y. 2023, Seven-Day Vonoprazan-Based *Triple Therapy* as First-Line *Helicobacter pylori* Treatment in Comparison with Extended Sequential Therapy, *JGH Open: An Open Access Journal of Gastroenterology and Hepatology*, **7(2)**: 105–109.
- Dipiro, J. T., Wells, B. G., Schwinghammer, T. L., and Dipiro, C. V. 2020, *Pharmacotherapy Handbook 11th Edition*, New York : McGraw-Hill Companies.
- Domingues, G., Chinzon, D., Moraes-Filho, J. P., Senra, J., Perrotti, M., and Zaterka, S. 2022, Potassium-Competitive Acid Blockers, A New Therapeutic Class, and Their Role in Acid-Related Diseases: A Narrative Review, *Gastroenterology*, **17(1)**.
- Echizen H. 2016, The First-in-Class Potassium-Competitive Acid Blocker, Vonoprazan Fumarate: Pharmacokinetic and Pharmacodynamic Considerations, *Clinical Pharmacokinetics*, **55(4)**: 409–418.
- El Rouby, N., Lima, J. J., and Johnson, J. A. 2018, Proton Pump Inhibitors: From CYP2C19 Pharmacogenetics to Precision Medicine, *Expert Opinion on Drug Metabolism & Toxicology*, **14(4)**:447-460.

- Fallone, C. A., Barkun, A. N., Szilagyi, A., Herba, K. M., Sewitch, M., Martel, M., and Fallone, S. S. 2013, Prolonged Treatment Duration is Required for Successful *Helicobacter pylori* Eradication with Proton Pump Inhibitor Triple Therapy in Canada, *Journal Canadien de Gastroenterologie*, **27(7)**: 397–402.
- Fatehi, F., Gray, L.C. and Wootton, R. 2013, How to Improve Your Pubmed/MEDLINE Searches: 1. Background and Basic Searching, *Journal of Telemedicine and Telecare*, **19(8)**: 479–486.
- Gao, W., Ye, H., Deng, X., Wang, C., Xu, Y., Li, Y., Zhang, X., and Cheng, H. 2020, Rabeprazole-Amoxicillin Dual Therapy as First-Line Treatment for *H. pylori* Eradication In Special Patients: A Retrospective, Real-Life Study, *Helicobacter*, **25(5)**: e12717.
- Garza-González, E., Perez-Perez, G. I., Maldonado-Garza, H. J., and Bosques-Padilla, F. J. 2014, A review of *Helicobacter pylori* Diagnosis, Treatment, and Methods to Detect Eradication, **20(6)**:1438–1449.
- Graham, D. Y., Lu, H., and Yamaoka, Y. 2010, Therapy for *Helicobacter pylori* Infection Can Be Improved: Sequential Therapy and Beyond, *Drugs*, **68(6)**: 725–736.
- Hagiwara, T., Mukaisho, K., Nakayama, T., Hattori, T., and Sugihara, H. 2015, Proton Pump Inhibitors and *Helicobacter pylori*-Associated Pathogenesis, *Asian Pacific Journal of Cancer Prevention*, **16(4)**: 1315–1319.
- Hajjiah. 2012, *Metodologi Penelitian*, PT. Rineka Cipta: Jakarta.
- Harding, H., and Burton, D. 2012, *Pediatric Laryngology and Bronchoesophagology*, Philadelphia: Lippincott-Raven.
- Hirschl, A. M., and Makristathis, A. 2007, Methods to Detect *Helicobacter pylori*: From Culture to Molecular Biology, *Helicobacter*, **12(2)**: 6–11.

- Hooi, J. K. Y., Lai, W. Y., Ng, W. K., Suen, M. M. Y., Underwood, F. E., Tanyingoh, D., Malfertheiner, P., Graham, D. Y., Wong, V. W. S., Wu, J. C. Y., Chan, F. K. L., Sung, J. J. Y., Kaplan, G. G., and Ng, S. C. 2017, Global Prevalence of *Helicobacter pylori* Infection: Systematic Review and Meta-Analysis, *Gastroenterology*, **153(2)**: 420–429.
- Hori, Y., Imanishi, A., Matsukawa, J., Tsukimi, Y., Nishida, H., Arikawa, Y., Hirase, K., Kajino, M., and Inatomi, N. 2010, 1-[5-(2-Fluorophenyl)-1-(Pyridin-3-Ylsulfonyl)-1H-Pyrrol-3-Yl]-N-Methylmethanamine Monofumarate (TAK-438), A Novel and Potent Potassium-Competitive Acid Blocker for The Treatment of Acid-related Diseases, *The Journal of Pharmacology and Experimental Therapeutics*, **335(1)**: 231–238.
- Hwang, S., Ko, J. W., Lee, H., Kim, S., Kim, B., Song, G. S., and Kim, J. 2021, Co-Administration of Vonoprazan, Not Tegoprazan, Affects the Pharmacokinetics of Atorvastatin in Healthy Male Subjects, *Frontiers in Pharmacology*, **12**: 754 – 849.
- Ierardi, E., Losurdo, G., Fortezza, R. F., Principi, M., Barone, M., and Leo, A. D. 2019, Optimizing Proton Pump Inhibitors in *Helicobacter pylori* Treatment: Old and New Tricks to Improve Effectiveness, *World Journal of Gastroenterology*, **25(34)**: 5097–5104.
- Kambara, H., Hosohata, K., Nakatsuji, T., Ueno, S., Oyama, S., Inada, A., Niinomi, I., Wakabayashi, T., & Iwanaga, K. 2020, Safety Profile of Vonoprazan Compared with Proton Pump Inhibitors: Insight from a Pharmacovigilance Study, *Die Pharmazie*, **75(10)**: 527–530.
- Kao, C. Y., Sheu, B. S., and Wu, J. J. 2016, *Helicobacter pylori* Infection: An Overview of Bacterial Virulence Factors and Pathogenesis, *Biomedical journal*, **39(1)**: 14–23.
- Kotilea, K., Bontems, P., and Touati, E. 2019, Epidemiology, Diagnosis and Risk Factors of *Helicobacter pylori* Infection, *Advances in Experimental Medicine and Biology*, **1149**:17–33.
- Kusunoki, M., Yuki, M., Ishitobi, H., Kobayashi, Y., Nagaoka, M., Takahashi, Y., Fukuba, N., Komazawa, Y., Shizuku, T., and Kinoshita, Y. 2019, Effect of Age on Effectiveness of

- Vonoprazan in *Triple therapy* for *Helicobacter pylori* Eradication, *Internal medicine*, **58(11)**: 1549–1555.
- Lahner, E., Carabotti, M., and Annibale, B. 2018, Treatment of *Helicobacter pylori* Infection in Atrophic Gastritis, *World Journal of Gastroenterology*, **24(22)**: 2373–2380.
- Lu, L., Wang, Y., Ye, J., Han, Y., Lou, G., Li, Y., Yan, H., and Du, Q. 2023, Quadruple Therapy with Vonoprazan 20 mg Daily as A First-Line Treatment For *Helicobacter pylori* Infection: A Single-Center, Open-Label, Noninferiority, Randomized Controlled Trial, *Helicobacter*, **28(1)**: e12940.
- Maruyama, M., Tanaka, N., Kubota, D., Miyajima, M., Kimura, T., Tokutake, K., Imai, R., Fujisawa, T., Mori, H., Matsuda, Y., Wada, S., Horiuchi, A., and Kiyosawa, K. 2017, Vonoprazan-Based Regimen is More Useful than PPI-Based One as A First-Line *Helicobacter pylori* Eradication: A Randomized Controlled Trial, *Canadian Journal of Gastroenterology & Hepatology*, **2017**: 7.
- Miftahussurur, M., Nusi, I. A., Akil, F., Syam, A. F., Wibawa, I. D. N., Rezkitha, Y. A. A., Maimunah, U., Subsomwong, P., Parewangi, M. L., Mariadi, I. K., Adi, P., Uchida, T., Purbayu, H., Sugihartono, T., Waskito, L. A., Hidayati, H. B., Lusida, M. I., and Yamaoka, Y. 2017, Gastric Mucosal Status in Populations with A Low Prevalence of *Helicobacter pylori* in Indonesia, *PloS One*, **12(5)**: (e0176203).
- Mori, N., Nishiura, Y., Suga, D., Moritani, I., Yamanaka, Y., Ooya, Y., Inoue, H., Takase, K., Hioki, M., and Shiraki, K. 2018, Second-Line *Triple Therapy* in Failures with Vonoprazan-Based *Triple Therapy* for Eradication of *Helicobacter Pylori*, *Biomedical Reports*, **9(2)**: 169–174.
- Mulford, D. J., Leifke, E., Hibberd, M., and Howden, C. W. 2021, The Effect of Food on the Pharmacokinetics of the Potassium-Competitive Acid Blocker Vonoprazan, *Clinical Pharmacology in Drug Development*, **11(2)**: 278–284.
- Murakami, K., Sakurai, Y., Shiino, M., Funao, N., Nishimura, A., and Asaka, M. 2016, Vonoprazan, A Novel Potassium-Competitive Acid Blocker, As A Component Of First-Line And Second-Line *Triple Therapy* For *Helicobacter Pylori*

- Eradication: A Phase III, Randomised, Double-Blind Study, *Gut*, **65(9)**:1439–1446.
- Notoatmodjo, S. 2012, *Metodologi Penelitian Kesehatan*, Rineka Cipta: Jakarta.
- Obleaga, C. V., Vere, C. C., Valcea, I. D., Ciorbagiu, M. C., Moraru, E., and Mirea, C. S. 2016, *Helicobacter pylori*: Types of Diseases, Diagnosis, Treatment and Causes of Therapeutic Failure, *Journal of Mind and Medical Sciences*, **3(2)**: 150–161.
- Octavia, M., Ikawati, Z., dan Andayani, T. M. 2019, Kajian Efektivitas Lansoprazol dan Pantoprazol sebagai Profilaksis Stress Ulcers di Intensive Care Unit (ICU), *Media Pharmaceutica Indonesiana*, **2(3)**: 165-172.
- Ofori, E. G., Adinortey, C. A., Bockarie, A. S., Kyei, F., Tagoe, E. A., and Adinortey, M. B. 2019, *Helicobacter pylori* Infection, Virulence Genes' Distribution and Accompanying Clinical Outcomes: The West Africa Situation, *BioMed Research International*, **2019**: 13(ID7312908).
- Ono, S., Kato, M., Nakagawa, S., Mabe, K., and Sakamoto, N. 2017, Vonoprazan Improves The Efficacy of *Helicobacter pylori* Eradication Therapy with A Regimen Consisting of Clarithromycin and Metronidazole in Patients Allergic to Penicillin, *Helicobacter*, **22(3)**: 10.1111/hel.12374.
- Oshima, T., and Miwa, H. 2018, Potent Potassium-competitive Acid Blockers: A New Era for the Treatment of Acid-related Diseases, *Journal Neurogastroenterol Motil*, **24(3)**: 334-344.
- Ozaki, H., Harada, S., Takeuchi, T., Kawaguchi, S., Takahashi, Y., Kojima, Y., Ota, K., Hongo, Y., Ashida, K., Sakaguchi, M., Tokioka, S., Sakamoto, H., Furuta, T., Tominaga, K., and Higuchi, K. 2018, Vonoprazan, A Novel Potassium-Competitive Acid Blocker, Should be Used for The *Helicobacter pylori* Eradication Therapy as First Choice: A Large Sample Study of Vonoprazan in Real World Compared with Our Randomized Control Trial Using Second-Generation Proton Pump Inhibitors for *Helicobacter pylori* Eradication Therapy, *Digestion*, **97(3)**: 212–218.

- Ozbey, G., and Hanafiah, A. 2017, Epidemiology, Diagnosis, and Risk Factors of *Helicobacter pylori* Infection in Children, *Euroasian Journal of Hepato-Gastroenterology*, **7(1)**: 34–39.
- Paulsen, F., and Waschke, J. 2013, *Sobotta Atlas Anatomi Manusia: Anatomi Umum dan Muskuloskeletal*, Penerjemah: Brahm U. Penerbit, Jakarta: EGC.
- Pop, R., Tăbăran, A. F., Ungur, A. P., Negoescu, A., and Cătoi, C. 2022, *Helicobacter pylori*-Induced Gastric Infections: From Pathogenesis to Novel Therapeutic Approaches Using Silver Nanoparticles, *Pharmaceutics*, **14(7)**: 14–63.
- Pratama, H. 2016, Eradikasi *Helicobacter pylori*, *Cermin Dunia Kedokteran*, **43(8)**: 592–595.
- Ramdhani, A., Ramdhani, M. A., and Amin, A. S. 2014, Writing a Literature Review Research Paper: A step-by-step approach, *International Journal of Basic and Applied Science*, **3(1)**: 47–56.
- Rawla, P., Sunkara, T., Oforu, A., and Gaduputi, V. 2018, Potassium-Competitive Acid Blockers - Are They The Next Generation of Proton Pump Inhibitors, *World Journal Of Gastrointestinal Pharmacology and Therapeutics*, **9(7)**: 63–68.
- Roberts, L. T., Issa, P. P., Sinnathamby, E. S., Granier, M., Mayeux, H., Eubanks, T. N., and Kaye, A. D. 2022, *Helicobacter Pylori*: A Review of Current Treatment Options in Clinical Practice, *Life*, **12(12)**: 20–38.
- Sa, A., Sholeh, A. R., dan Maryani, N. 2022, Faktor Risiko dan Pengobatan Infeksi *Helicobacter pylori* pada Suku Baduy di Provinsi Banten, *Jurnal Biologi Dan Pembelajaran Biologi*, **7(1)**: sa58–71.
- Sakurai, Y., Nishimura, A., Kennedy, G., Hibberd, M., Jenkins, R., Okamoto, H., Yoneyama, T., Jenkins, H., Ashida, K., Irie, S., and Täubel, J. 2015, Safety, Tolerability, Pharmacokinetics, and Pharmacodynamics of Single Rising TAK-438 (Vonoprazan) Doses in Healthy Male Japanese/non-Japanese Subjects, *Clinical and Translational Gastroenterology*, **6(6)**: e94.

- Sbeit, W., Khoury, T., Kadah, A., Asadi, W., Shahin, A., Lubany, A., Safadi, M., Haddad, H., Abu Ahmad, R., Abu El Hija, S., Abboud, R., Mahamid, M., Pellicano, R., and Mari, A. 2020, Proton Pump Inhibitor Use May Increase the Risk of Diverticulitis but Not It's Severity among Patients with Colonic Diverticulosis: A Multicenter Study, *Journal of clinical medicine*, **9(9)**: 29 – 66.
- Scarpignato, C., and Hunt, R. H. 2021, Acid Suppressant Therapy: A Step Forward with Potassium-Competitive Acid Blockers, *Current Treatment Options in Gastroenterology*, **19**: 94-132.
- Shakeri, M., Zakeri, F., Changizi, V., Rajabpour, M. R., and Farshidpour, M. R. 2019, Cytogenetic Effects of Radiation and Genetic Polymorphisms of The XRCC1 and XRCC3 Repair Genes in Industrial Radiographers, *Radiation and environmental biophysics*, **58(2)**: 247–255.
- Shinozaki, S., Nomoto, H., Kondo, Y., Sakamoto, H., Hayashi, Y., Yamamoto, H., Lefor, A. K., and Osawa, H. 2016, Comparison of Vonoprazan and Proton Pump Inhibitors for Eradication of *Helicobacter pylori*, *The Kaohsiung journal of Medical Sciences*, **32(5)**: 255–260.
- Shinozaki, S., Osawa, H., Sakamoto, H., Hayashi, Y., Kobayashi, Y., Miura, Y., Lefor, A. K., and Yamamoto, H. 2018, Pre-Treatment with Proton Pump Inhibitors Decreases the Success of Primary *Helicobacter Pylori* Eradication Using a Vonoprazan-Based Regimen, *The Kaohsiung journal of medical sciences*, **34(8)**: 456–460.
- Snyder, H. 2019, Literature Review as A Research Methodology: An Overview and Guidelines, *Journal of Business Research*, **104(C)**: 333 – 339.
- Steglitz, J. 2015, Evidence Based Practice, *International Encyclopedia of the Social & Behavioral Sciences*, **8**: 332 – 338.
- Sue, S., Sasaki, T., Kaneko, H., Irie, K., Kondo, M., and Maeda, S. 2021, *Helicobacter pylori* Rescue Treatment with Vonoprazan, Metronidazole, and Sitafloxacin in The Presence of Penicillin Allergy, *An Open Access Journal of Gastroenterology and Hepatology*, **5(2)**: 307–311.

- Sue, S., Shibata, W., Sasaki, T., Kaneko, H., Irie, K., Kondo, M., and Maeda, S. 2019, Randomized Trial of Vonoprazan-Based Versus Proton-Pump Inhibitor-Based Third-Line *Triple Therapy* with Sitafloxacin for *Helicobacter pylori*, *Journal of Gastroenterology and Hepatology*, **34(4)**: 686–692.
- Sugano, K. 2018, Vonoprazan Fumarate, A Novel Potassium- Competitive Acid Blocker, in The Management of Gastroesophageal Reflux Disease: Safety and Clinical Evidence to Date, *Therapeutic Advances in Gastroenterology Review*: **11**: 1–14.
- Sukimo. 2021, Kolaborasi Pustakawan Dalam Pengambilan Keputusan Klinis Berbasis Bukti Terkini (Evidence Based Medicine): Studi Kasus Di Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan. *Visi Pustaka*, **23(1)**: 67–75.
- Suzuki, S., Gotoda, T., Kusano, C., Iwatsuka, K., and Moriyama, M. 2016, The Efficacy and Tolerability of a *Triple therapy* Containing a Potassium-Competitive Acid Blocker Compared with a 7-Day PPI-Based Low-Dose Clarithromycin *Triple therapy*, *The American journal of gastroenterology*, **111(7)**: 949–956.
- Tanabe, H., Yoshino, K., Ando, K., Nomura, Y., Ohta, K., Satoh, K., Ichiishi, E., Ishizuka, A., Otake, T., Kohgo, Y., Fujiya, M., and Okumura, T. 2018, Vonoprazan-Based *Triple Therapy* is Non-Inferior to Susceptibility-Guided Proton Pump Inhibitor-Based *Triple Therapy* for *Helicobacter Pylori* Eradication, *Annals of Clinical Microbiology and Antimicrobials*, **17(1)**: 29.
- Tang, Y., Tang, G., Pan, L., Zhu, H., Zhou, S., and Wei, Z. 2020, Clinical Factors Associated with Initial *Helicobacter pylori* Eradication Therapy: A Retrospective Study in China, *Scientific reports*, **10(1)**: 15403.
- Utami, C. P., dan Zuraedah, E. 2015, Peran dan Mekanisme Protein cagA *Helicobacter pylori* pada Keganasan Lambung, *Pratista Patologi*, **4(1)**: 76–84.
- Wang, M. S., Gong, Y., Zhuo, L. S., Shi, X. X., Tian, Y. G., Huang, C. K., Huang, W., & Yang, G. F. 2022, Distribution- and Metabolism-Based Drug Discovery: A Potassium-Competitive Acid Blocker as a Proof of Concept, *Research Washington, D.C.*, **20(22)**: 985-2518.

- Warganegara, E., dan Tantri, B. U. N. 2016, Pengaruh Infeksi *Helicobacter pylori* pada Gaster terhadap Anemia Pernisiosa, *Majority*, **5(9)**: 33–37.
- Watari, J., Chen, N., Amenta, P. S., Fukui, H., Oshima, T., Tomita, T., Miwa, H., Lim, K. J., and Das, K. M. 2014, *Helicobacter pylori* Associated Chronic Gastritis, Clinical Syndromes, Precancerous Lesions, And Pathogenesis of Gastric Cancer Development, *World Journal of Gastroenterology*, **20(18)**: 5461–5473.
- Whitmire, J. M., and Merrell, D. S. 2012, Successful Culture Techniques for *Helicobacter* Species: Verification of *Helicobacter* Identity Using 16S Rrna Gene Sequence Analysis, *Methods in Molecular Biology*, **921**: 37–40.
- World Gastroenterology Organisation, 2011, *Helicobacter pylori* in *Developing Countries*, World Gastroenterology Organisation Global Guideline.
- World Gastroenterology Organisation, 2021, *Helicobacter pylori*, World Gastroenterology Organisation Global Guideline.
- Xu, W., Bai, Z., Shang, Y., Wang, J., Wong, Y., & Qi, X. 2023, Incidence and type of adverse events in patients taking vonoprazan: A systematic review and meta-analysis, *Therapeutic advances in gastroenterology*, **16(17)**: 562-848.
- Yamasaki, H., Kawaguchi, N., Nonaka, M., Takahashi, J., Morohashi, A., Hirabayashi, H., Moriwaki, T., and Asahi, S. 2017, In Vitro Metabolism of TAK-438, Vonoprazan Fumarate, A Novel Potassium-Competitive Acid Blocker, *Xenobiotica; the fate of foreign compounds in biological systems*, **47(12)**: 1027–1034.
- Yibirin, M., De Oliveira, D., Valera, R., Plitt, A. E., and Lutgen, S. 2021, Adverse Effects Associated with Proton Pump Inhibitor Use, *Cureus*, **13(1)**: e12759.
- Zuberi, B. F., Ali, F. S., Rasheed, T., Bader, N., Hussain, S. M., & Saleem, A. 2022, Comparison of Vonoprazan and Amoxicillin Dual Therapy with Standard *Triple therapy* with Proton Pump Inhibitor for *Helicobacter Pylori* Eradication: A Randomized Control Trial, *Pakistan journal of medical sciences*, **38(4Part-II)**: 965–969.