

DAFTAR PUSTAKA

1. Patel, K., & Zakowski, M. (2021). Enhanced Recovery After Cesarean: Current and Emerging Trends. *Current Anesthesiology Reports*, 11(2), 136. <https://doi.org/10.1007/S40140-021-00442-9>.
2. Lee, B., Schug, S. A., Joshi, G. P., Kehlet, H., Beloeil, H., Bonnet, F., Lavand'Homme, P., Lirk, P., Pogatzki-Zahn, E., Raeder, J., Rawal, N., & van der Velde, M. (2018). Procedure-Specific Pain Management (PROSPECT) - An update. *Best Practice & Research. Clinical Anaesthesiology*, 32(2), 101–111. <https://doi.org/10.1016/J.BPA.2018.06.012>.
3. Hanna, M., Jaqua, E., Nguyen, V., & Clay, J. (2022). B Vitamins: Functions and Uses in Medicine. *The Permanente Journal*, 26(2), 89. <https://doi.org/10.7812/TPP/21.204>.
4. Paez-Hurtado, A. M., Calderon-Ospina, C. A., & Nava-Mesa, M. O. (2023). Mechanisms of action of vitamin B1 (thiamine), B6 (pyridoxine), and B12 (cobalamin) in pain: a narrative review. *Nutritional Neuroscience*, 26(3), 235–253. <https://doi.org/10.1080/1028415X.2022.2034242>.
5. Saghiri, M. A., Asatourian, A., Ershadifar, S., Moghadam, M. M., & Sheibani, N. (2017). Vitamins and regulation of angiogenesis: [A, B1, B2, B3, B6, B9, B12, C, D, E, K]. *Journal of Functional Foods*, 38, 180–196. <https://doi.org/10.1016/J.JFF.2017.09.005>.
6. Hung, K. L., Wang, C. C., Huang, C. Y., & Wang, S. J. (2009). Cyanocobalamin, vitamin B12, depresses glutamate release through inhibition of voltage-dependent Ca²⁺ influx in rat cerebrocortical nerve terminals (synaptosomes). *European Journal of Pharmacology*, 602(2–3), 230–237. <https://doi.org/10.1016/J.EJPHAR.2008.11.059>.
7. Raja, S. N., Carr, D. B., Cohen, M., Finnerup, N. B., Flor, H., Gibson, S., Keefe, F. J., Mogil, J. S., Ringkamp, M., Sluka, K. A., Song, X. J., Stevens, B., Sullivan, M. D., Tutelman, P. R., Ushida, T., & Vader, K. (2020). The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises. *Pain*, 161(9), 1976–1982. <https://doi.org/10.1097/J.PAIN.0000000000001939>.
8. Rawal, N. (2016). Current issues in postoperative pain management. *European Journal of Anaesthesiology*, 33(3), 160–171. <https://doi.org/10.1097/EJA.0000000000000366>.
9. Daly, C. (2013). Postoperative pain management. *Australian Prescriber*, 36(6), 205. <https://doi.org/10.18773/AUSTPRESCR.2013.085>.



M. (2006). ACUTE POST OPERATIVE PAIN. *Indian Journal of sthesia*.

[//journals.lww.com/ijaweb/Citation/2006/50050/ACUTE_POST_OPER_E_PAIN.3.aspx](http://journals.lww.com/ijaweb/Citation/2006/50050/ACUTE_POST_OPER_E_PAIN.3.aspx).

11. Berry, P. H., Richard, C., Covington, E., Dahl, J., Katz, J. A., Miaskowski, C., & McLean, M. (2001). Pain: Current Understanding of Assessment, Management, and Treatments. National Pharmaceutical Council & Joint Commission on Accreditation of Healthcare Organizations.
12. Dureja, G. P., Iyer, R. N., Das, G., Ahdal, J., & Narang, P. (2017). Evidence and consensus recommendations for the pharmacological management of pain in India. *Journal of Pain Research*, 10, 709–736. <https://doi.org/10.2147/JPR.S128655>.
13. Swieboda, P., Rafal, F., Andrzej, P., & Mariola, D. (2013). Assessment of pain: types, mechanism and treatment. *Ann Agric Environ Med*. <https://pubmed.ncbi.nlm.nih.gov/25000833/>.
14. Breivik, H., Borchgrevink, P. C., Allen, S. M., Rosseland, L. A., Romundstad, L., Breivik Hals, E. K., Kvarstein, G., & Stubhaug, A. (2008). Assessment of pain. *British Journal of Anaesthesia*, 101(1), 17–24. <https://doi.org/10.1093/BJA/AEN103>.
15. Maryniak, K. (2016). Pain Assessment and Management. American Nurses Credentialing Center.
16. Fillingim, R. B. (2005). Pain measurement in humans. *Core Topics in Pain*, 71–78. <https://doi.org/10.1017/CBO9780511544583.012>.
17. Gibbons, L., Belizán, J. M., Lauer, J. A., Betrán, A. P., Meraldi, M., & Althabe, F. (2010). The global numbers and costs of additionally needed and unnecessary caesarean sections performed per year: overuse as a barrier to universal coverage.
18. Feng, X. L., Xu, L., Guo, Y., & Ronsmans, C. (2012). Factors influencing rising caesarean section rates in China between 1988 and 2008. *Bulletin of the World Health Organization*, 90(1). <https://doi.org/10.2471/BLT.11.090399>.
19. World Health Organization. (2015). Caesarean sections should only be performed when medically necessary says WHO. WHO. <https://www.who.int/news/item/09-04-2015-caesarean-sections-should-only-be-performed-when-medically-necessary-says-who>.
20. Kementerian Kesehatan. (2013). Laporan Nasional Riset Kesehatan Dasar 2013.
21. Badan Pusat Statistik, BKKBN, & Kementerian Kesehatan. (2023). Laporan Survei Demografi dan Kesehatan Indonesia 2017.
22. Pregnancy and birth: Cesarean sections: What are the pros and cons of regional and general anesthetics? (2018). <https://www.ncbi.nlm.nih.gov/books/NBK279566/>.
- , A., Abdulla, S., Lubikire, A., Nabukenya, M. T., Igaga, E., Bulamba, F., kula, D., & Olufolabi, A. J. (2019). Postoperative pain after cesarean on: assessment and management in a tertiary hospital in a low-income ry. *BMC Health Services Research*, 19(1). <https://doi.org/10.1186/S12913-019-3911-X>.



24. Borges, N. C., e Silva, B. C., Pedroso, C. F., Silva, T. C., Tatagiba, B. S. F., & Pereira, L. V. (2017). Postoperative pain in women undergoing caesarean section. *Enfermería Global*, 16(4), 354–383. <https://doi.org/10.6018/EGLOBAL.16.4.267721>.
25. Borges, N. C., de Deus, J. M., Guimarães, R. A., Conde, D. M., Bachion, M. M., de Moura, L. A., & Pereira, L. V. (2020). The incidence of chronic pain following Cesarean section and associated risk factors: A cohort of women followed up for three months. *PloS One*, 15(9). <https://doi.org/10.1371/JOURNAL.PONE.0238634>.
26. Kainu, J. P., Sarvela, J., Tiippuna, E., Halmesmäki, E., & Korttila, K. T. (2010). Persistent pain after caesarean section and vaginal birth: a cohort study. *International Journal of Obstetric Anesthesia*, 19(1), 4–9. <https://doi.org/10.1016/J.IJOA.2009.03.013>.
27. Ahmad, M. R., & Taufik, R. H. (2021). Manajemen Nyeri Terkini pada Pasien Pasca Seksio Sesarea. *Jurnal Anestesi Obstetri Indonesia*, 4(1), 63–78. <https://doi.org/10.47507/OBSTETRI.V4I1.53>.
28. Roofthooft, E., Joshi, G. P., Rawal, N., Van de Velde, M., Joshi, G. P., Pogatzki-Zahn, E., Van de Velde, M., Schug, S., Kehlet, H., Bonnet, F., Rawal, N., Delbos, A., Lavand'homme, P., Beloeil, H., Raeder, J., Sauter, A., Albrecht, E., Lirk, P., Lobo, D., & Freys, S. (2021). PROSPECT guideline for elective caesarean section: updated systematic review and procedure-specific postoperative pain management recommendations. *Anaesthesia*, 76(5), 665–680. <https://doi.org/10.1111/ANAE.15339>.
29. Alvarado, A. M. and Navarro, S. A. (2016) ‘Complex B vitamins: Physiology and Therapeutic Effect on Pain’, *American Journal of Pharmacological Sciences*, Vol. 4, 2016, Pages 20-27, 4(2), pp. 20–27. doi: 10.12691/AJPS-4-2-2.
30. Voelker, A. L., Taylor, L. S. and Mauer, L. J. (2021) ‘Effect of pH and concentration on the chemical stability and reaction kinetics of thiamine mononitrate and thiamine chloride hydrochloride in solution’, *BMC Chemistry*, 15(1), pp. 1–14. doi: 10.1186/S13065-021-00773-Y/FIGURES/6.
31. Dudeja, P. K. et al. (2001) ‘Mechanism of thiamine uptake by human jejunal brush-border membrane vesicles’, *American Journal of Physiology - Cell Physiology*, 281(3), 50-3. doi: 10.1152/AJPCELL.2001.281.3.C786/ASSET/IMAGES/LARGE/H00910612007.jpeg.
32. Medeiros, D. M. (2007) ‘Dietary Reference Intakes: the Essential Guide to Nutrient Requirements’, *The American Journal of Clinical Nutrition*, 85(3), pp. 921–924. doi: 10.1093/AJCN/85.3.924.
- neier, M. (2003) ‘Thiamin’, in Kohlmeier, M. B. T.-N. M. (ed.) *Food Science and Technology*. London: Academic Press, pp. 551–561. doi: //doi.org/10.1016/B978-012417762-8.50080-6.



34. Spector, R. (1976) 'Thiamine transport in the central nervous system', <https://doi.org/10.1152/ajplegacy.1976.230.4.1101>, 230(4), pp. 1101–1107. doi: 10.1152/AJPLEGACY.1976.230.4.1101.
35. Calderón-Ospina, C. A. and Nava-Mesa, M. O. (2020) 'B Vitamins in the nervous system: Current knowledge of the biochemical modes of action and synergies of thiamine, pyridoxine, and cobalamin', *CNS Neuroscience & Therapeutics*, 26(1), pp. 5–13. doi: 10.1111/CNS.13207.
36. Wang Z-B, Gan Q, Rupert RL, Zeng Y-M, Song X-J. (2005) 'Thiamine, pyridoxine, cyanocobalamin and their combination inhibit thermal, but not mechanical hyperalgesia in rats with primary sensory neuron injury', *Pain*, 114(1–2), pp. 266–77.
37. Itokawa Y, Cooper JR. (1970) 'Ion movements and thiamine. II. The release of the vitamin from membrane fragments', *Biochim Biophys Acta*, 196(2), pp. 274–84. doi:10.1016/0005-2736(70)90015-5.
38. Zylka MJ. (2011) 'Pain-relieving prospects for adenosine receptors and ectonucleotidases', *Trends Mol Med*, 17(4), pp. 188–96. doi:10.1016/j.molmed.2010.12.006.
39. Disorders, I. of M. (US) F. on N. and N. S. (2011). Overview of the Glutamatergic System. <https://www.ncbi.nlm.nih.gov/books/NBK62187/>
40. Zhou, Y., & Danbolt, N. C. (2014). Glutamate as a neurotransmitter in the healthy brain. *Journal of Neural Transmission*, 121(8), 799. <https://doi.org/10.1007/S00702-014-1180-8>.
41. Swanson, C. J., Bures, M., Johnson, M. P., Linden, A. M., Monn, J. A., & Schoepp, D. D. (2005). Metabotropic glutamate receptors as novel targets for anxiety and stress disorders. *Nature Reviews. Drug Discovery*, 4(2), 131–144. <https://doi.org/10.1038/NRD1630>.
42. Bezzi, P., Carmignoto, G., Pasti, L., Vesce, S., Rossi, D., Rizzini, B. L., Pozzant, T., & Volterra, A. (1998). Prostaglandins stimulate calcium-dependent glutamate release in astrocytes. *Nature*, 391(6664), 281–285. <https://doi.org/10.1038/34651>.
43. Bunga, E. J. R., Lukas, E., Tumedia, J. L., Maisuri, S., & Chalid, T. (2018). Effect of Pyridoxine on Prostaglandin Plasma Level for Primary Dysmenorrheal Treatment: Indonesian Journal of Obstetrics and Gynecology, 239–242. <https://doi.org/10.32771/INAJOG.V6I4.848>.
44. Hung, K. L., Wang, C. C., Huang, C. Y., & Wang, S. J. (2009). Cyanocobalamin, vitamin B12, depresses glutamate release through inhibition of voltage-dependent Ca²⁺ influx in rat cerebrocortical nerve terminals (synaptosomes). *European Journal of Pharmacology*, 602(2–3), 230–237. //doi.org/10.1016/J.EJPHAR.2008.11.059.
- nacogn, J., Ardhi, M. S., Hamdan, M., & Romdhoni, A. C. (2023). Effect thiamine on Serum Glutamate in Ischemic Stroke Animal Model.



Phcogj.Com Pharmacognosy Journal, 15(2), 390–392.
<https://doi.org/10.5530/pj.2023.15.60>.

46. Lee, G. J., Choi, S. K., Yin, C. S., Choi, S., Lim, J. E., Park, J. H., Oh, B. S., & Park, H. K. (2009). Real time monitoring of extracellular glutamate release in rat ischemia model treated by traditional acupuncture. IFMBE Proceedings, 24, 309–310. https://doi.org/10.1007/978-3-642-01697-4_109/COVER.
47. Viggiano, E., Passavanti, M. B., Pace, M. C., Sansone, P., Spaziano, G., Viggiano, A., Aurilio, C., Monda, M., Viggiano, A., Pota, V., De Luca, B., & De Luca, E. (2012). Plasma glutamine decreases immediately after surgery and is related to incisiveness. Journal of Cellular Physiology, 227(5), 1988–1991. <https://doi.org/10.1002/JCP.22928>.
48. Murai, S., Hishikawa, T., Takeda, Y., Okura, Y., Fushimi, M., Kawase, H., Takahashi, Y., Kidani, N., Haruma, J., Hiramatsu, M., Sugi, K., Morimatsu, H., & Date, I. (2022). Depolarization time and extracellular glutamate levels aggravate ultraearly brain injury after subarachnoid hemorrhage. Scientific Reports, 12(1). <https://doi.org/10.1038/S41598-022-14360-1>.
49. Hawkins, R. A. (2009). The blood-brain barrier and glutamate. The American Journal of Clinical Nutrition, 90(3), 867S. <https://doi.org/10.3945/AJCN.2009.27462BB>.
50. Sowers, J. L., Sowers, M. L., Shavkunov, A. S., Hawkins, B. E., Wu, P., DeWitt, D. S., Prough, D. S., & Zhang, K. (2021). Traumatic brain injury induces region-specific glutamate metabolism changes as measured by multiple mass spectrometry methods. IScience, 24(10). <https://doi.org/10.1016/J.ISCI.2021.103108>.
51. Hurt JK, Coleman JL, Fitzpatrick BJ, Taylor-Blake B, Bridges AS, Vihko P, et al. (2012) ‘Prostatic acid phosphatase is required for the antinociceptive effects of thiamine and benfotiamine’, PLoS One, 7(10), pp. e48562. doi:10.1371/journal.pone.0048562.
52. Moallem SA, Hosseinzadeh H, Farahi S. (2008) ‘A study of acute and chronic anti-nociceptive and anti-inflammatory effects of thiamine in mice’, Iran Biomed J. 12 (3), pp.173–78.
53. Menezes RR, Godin AM, Rodrigues FF, Coura GME, Melo ISF, Brito AMS, et al. (2017) ‘Thiamine and riboflavin inhibit production of cytokines and increase the antiinflammatory activity of a corticosteroid in a chronic model of inflammation induced by complete Freund’s adjuvant’, Pharmacol Rep, 69(5), pp. 1036– 43. doi:10.1016/j.pharep.2017.04.011.
54. Song X-S, Huang Z-J, Song X-J. (2009) ‘Thiamine suppresses thermal hyperalgesia, inhibits hyperexcitability, and lessens alterations of sodium channels in injured, dorsal root ganglion neurons in rats’, Anesthesiology. 110 p. 387–400. doi:10.1097/ALN.0b013e3181942f1e.
- , M., Stahl, S. and Hellmann, H. (2018) ‘Vitamin B6 and Its Role in Cell Biology and Physiology’, Cells 2018, Vol. 7, Page 84, 7(7), p. 84. doi: 10.3390/CELLS7070084.

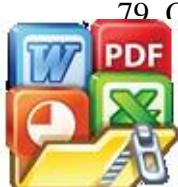


56. Jungert, A. et al. (2020) ‘Revised D-A-CH Reference Values for the Intake of Vitamin B6’, *Annals of Nutrition and Metabolism*, 76(4), pp. 213–222. doi: 10.1159/000508618.
57. Wilson et al. (2019) ‘Disorders affecting vitamin B6 metabolism’, *Journal of Inherited Metabolic Disease*, Volume 42, Issue 4, p. 629-646.
58. Zimmerman M, Bartoszyk GD, Bonke D, Jurna I, Wild A. (1990) ‘Antinociceptive properties of pyridoxine. Neurophysiological and behavioral findings’, *Ann N Y Acad Sci*, 585, pp. 219–30. doi:10.1111/j.1749-6632.
59. Jain SK, Lim G. (2001) ‘Pyridoxine and pyridoxamine inhibits superoxide radicals and prevents lipid peroxidation, protein glycosylation, and (Na⁺⁺K⁺)-ATPase activity reduction in high glucose-treated human erythrocytes’, *Free Radic Biol Med*, 30(3), pp. 232–37. doi:10.1016/s0891-5849(00)00462-7.
60. Keles M, Al B, Gumustekin K, Demircan B, Ozbey I, Akyuz M, et al. (2010) ‘Antioxidant status and lipid peroxidation in kidney tissue of rats fed with vitamin B6-deficient diet’ *Renal Failure*, 32, pp. 618–622.
61. Taş, S., Sarandöl, E., & Dirican, M. (2014) ‘Vitamin B6 supplementation improves oxidative stress and enhances serum paraoxonase/arylesterase activities in streptozotocin-induced diabetic rats’, *TheScientificWorldJournal*, 351598. <https://doi.org/10.1155/2014/351598>.
62. Mascolo E, Verni F. (2020) ‘Vitamin B6 and diabetes: relationship and molecular mechanisms’, *Int J Mol Sci*, 21, pp. 10. <https://www.ncbi.nlm.nih.gov/pubmed/32456137>. doi:10.3390/ijms21103669.
63. Pietrobon D, Moskowitz MA. (2013) ‘Pathophysiology of migraine’, *Annu Rev Physiol*, 75, pp. 365–391. doi:10.1146/annurev-physiol-030212-183717.
64. Huang Y, Su L, Wu J. (2016) ‘Pyridoxine supplementation improves the activity of recombinant glutamate decarboxylase and the enzymatic production of gamma-aminobutyric acid’, *PLoS One*, 11(7), pp. e0157466. doi:10.1371/journal.pone.0157466.
65. Yang and S.-J. Wang, (2009) ‘Pyridoxine inhibits depolarization-evoked glutamate release in nerve terminals from rat cerebral cortex: a possible neuroprotective mechanism?’, *The Journal of Pharmacology and Experimental Therapeutics*, 331(1), pp. 244–254, 2009.
66. Kennedy DO. (2016) ‘B vitamins and the brain: mechanisms, dose and efficacy – a review’, *Nutrients*, 8(2), pp. 68.
67. Burnstock, G. (2007) ‘Physiology and pathophysiology of purinergic neurotransmission’, *Physiol. Rev*, 87(2), pp. 659–797. doi:10.1152/physrev.00043.2006. PMID:17429044.



Li, M.F., Burgard, E.C., McGaraughty, S., Honore, P., Lynch, K., Brennan, et al. (2002) ‘A-317491, a novel potent and selective non-nucleotide agonist of P2X3 and P2X2/3 receptors, reduces chronic inflammatory and pathic pain in the rat’, *Proc. Natl. Acad. Sci. U.S.A.*, 99(26), pp. 17179–4. doi:10.1073/pnas.252537299. PMID:12482951.

69. Thériault, O., Poulin, H., Thomas, G. R., Friesen, A. D., Al-Shaqha, W. A., & Chahine, M. (2014) 'Pyridoxal-5'-phosphate (MC-1), a vitamin B6 derivative, inhibits expressed P2X receptors', *Canadian Journal of Physiology and Pharmacology*, 92(3), pp. 189–196. doi:10.1139/cjpp-2013-0404
70. Aufiero, E. et al. (2004) 'Pyridoxine Hydrochloride Treatment of Carpal Tunnel Syndrome: A Review', *Nutrition Reviews*, 62(3), pp. 96–104. doi: 10.1111/J.1753-4887.2004.TB00030.X.
71. Justo, R. et al. (2016) 'Relation between vitamins of the b complex, GABA and glutamate, and their role in neurocognitive disorders -Brief review', *International Journal of Basic and Applied Sciences*, 5(4), p. 229. doi: 10.14419/IJBAS.V5I4.6707.
72. Huang, S. C. et al. (2010) 'Vitamin B(6) supplementation improves pro-inflammatory responses in patients with rheumatoid arthritis', *European journal of clinical nutrition*, 64(9), pp. 1007–1013. doi: 10.1038/EJCN.2010.107.
73. BERNSTEIN, A. L. (1990) 'Vitamin B6 in Clinical Neurology', *Annals of the New York Academy of Sciences*, 585(1), pp. 250–260. doi: 10.1111/J.1749-6632.1990.TB28058.X.
74. Nava-Mesa, M. O. and Aispuru Lanche, G. R. (2021) '[Role of B vitamins, thiamine, pyridoxine, and cyanocobalamin in back pain and other musculoskeletal conditions: a narrative review]', *Semergen*, 47(8), pp. 551–562. doi: 10.1016/J.SEMERG.2021.01.010.
75. Sadeghi, O. et al. (2015) 'Effects of pyridoxine supplementation on severity, frequency and duration of migraine attacks in migraine patients with aura: A double-blind randomized clinical trial study in Iran.', *Iranian journal of neurology*, 14(2), pp. 74–80.
76. Vrolijk MF, Opperhuizen A, Jansen EHJM, Hageman GJ, Bast A, Haenen GRMM. (2017) 'The vitamin B6 paradox: supplementation with high concentrations of pyridoxine leads to decreased vitamin B6 function', *Toxicology*, 44, pp. 206–212. doi:10.1016/j.tiv.2017.07.009.
77. Berger, M. M., Shenkin, A., Schweinlin, A., Amrein, K., Augsburger, M., Biesalski, H. K., Bischoff, S. C., Casaer, M. P., Gundogan, K., Lepp, H. L., de Man, A. M. E., Muscogiuri, G., Pietka, M., Pironi, L., Rezzi, S., & Cuerda, C. (2022). ESPEN micronutrient guideline. *Clinical Nutrition* (Edinburgh, Scotland), 41(6), 1357–1424. <https://doi.org/10.1016/J.CLNU.2022.02.015>.
78. Geller, M., Oliveira, L., Nigri, R., Ge Mezitis, S., Ribeiro, M. G., De Souza Da Fonseca, A., Guimarães, O. R., Kaufman, R., & Wajnsztajn, F. (2017). B Vitamins for Neuropathy and Neuropathic Pain.
79. O'Leary, F. and Samman, S. (2010) 'Vitamin B12 in Health and Disease', *ents* 2010, Vol. 2, Pages 299-316, 2(3), pp. 299–316. doi: 10.1016/j.jnu.2010.02.029.
80. Ede, J. and Ueland, P. M. (2005) 'Novel and established markers of cobalamin deficiency: complementary or exclusive diagnostic strategies', *Journal of Internal Medicine*, 258(5), pp. 451–461. doi: 10.1111/j.1365-2796.2005.01532.x.



Seminars in vascular medicine, 5(2), pp. 140–155. doi: 10.1055/S-2005-872399.

81. Suzuki K, Tanaka H, Ebara M, Uto K, Matsuoka H, Nishimoto S, et al. (2017). Electrospun nanofiber sheets incorporating methylcobalamin promote nerve regeneration and functional recovery in a rat sciatic nerve crush injury model. *Acta Biomater.* 2017;53:250–59. doi:10. 1016/j.actbio.2017.02.004.
82. Xu, G. et al. (2016) ‘Local Administration of Methylcobalamin and Lidocaine for Acute Ophthalmic Herpetic Neuralgia: A Single-Center Randomized Controlled Trial’, *Pain practice : the official journal of World Institute of Pain*, 16(7), pp. 869–881. doi: 10.1111/PAPR.12328.
83. Okada K, Tanaka H, Temporin K, Okamoto M, Kuroda Y, Moritomo H, et al. (2010). Methylcobalamin increases Erk1/2 and Akt activities through the methylation cycle and promotes nerve regeneration in a rat sciatic nerve injury model. *Exp Neurol.* ;222 (2):191–203. doi:10.1016/j.expneurol.2009.12.017.
84. Zhang, M. et al. (2013) ‘Methylcobalamin: A potential vitamin of pain killer’, *Neural Plasticity*, 2013. doi: 10.1155/2013/424651.
85. Sun, H. et al. (2012) ‘Dexamethasone and vitamin B(12) synergistically promote peripheral nerve regeneration in rats by upregulating the expression of brain-derived neurotrophic factor’, *Archives of medical science : AMS*, 8(5), pp. 924–930. doi: 10.5114/AOMS.2012.31623.
86. Hosseinzadeh, H. et al. (2012) ‘Anti-nociceptive and anti-inflammatory effects of cyanocobalamin (vitamin B12) against acute and chronic pain and inflammation in mice’, *Arzneimittel-Forschung*, 62(7), pp. 324–329. doi: 10.1055/S-0032-1311635.
87. Chen, M. et al. (2011) ‘Methyl deficient diet aggravates experimental colitis in rats’, *Journal of Cellular and Molecular Medicine*, 15(11), p. 2486. doi: 10.1111/J.1582-4934.2010.01252.X.
88. Padi, S. S. V., Naidu, P. S. and Kulkarni, S. K. (2006) ‘Involvement of peripheral prostaglandins in formalin-induced nociceptive behaviours in the orofacial area of rats’, *Inflammopharmacology*, 14(1–2), pp. 57–61. doi: 10.1007/S10787-006-1495-7.
89. Imtiaz M, Begum N, Ali T, Gomes RR, Saha S, Tasfi RF, et al. (2016). Pain & inflammation: effects of short term daily administration of vitamin B12 & folic acid in long evans rats. *Bangl Crit Care J.* 4(1):33–37.
90. Bottiglieri, T. et al. (2000) ‘Homocysteine, folate, methylation, and monoamine metabolism in depression’, *Journal of neurology, neurosurgery, and psychiatry*, 69(2), pp. 228–232. doi: 10.1136/JNNP.69.2.228.
91. Wang, S. et al. (2019) ‘Vitamin B12 as a Treatment for Pain.’, *Pain physician*, , pp. E45–E52.
92. Waszinski, C. M. et al. (2015) ‘Vitamin B complex attenuated heat algesia following infraorbital nerve constriction in rats and reduced



- capsaicin in vivo and in vitro effects', European journal of pharmacology, 762, pp. 326–332. doi: 10.1016/J.EJPHAR.2015.05.063.
93. Goldberg, H. et al. (2017) 'A double-blind, randomized, comparative study of the use of a combination of uridine triphosphate trisodium, cytidine monophosphate disodium, and hydroxocobalamin, versus isolated treatment with hydroxocobalamin, in patients presenting with compressive neuralgias', Journal of pain research, 10, pp. 397–404. doi: 10.2147/JPR.S123045.
 94. Han, X. et al. (2017) 'Acupuncture combined with methylcobalamin for the treatment of chemotherapy-induced peripheral neuropathy in patients with multiple myeloma', BMC cancer, 17(1). doi: 10.1186/S12885-016-3037-Z.
 95. Geller, M. et al. (2016) 'Comparison of the action of diclofenac alone versus diclofenac plus B vitamins on mobility in patients with low back pain', Journal of Drug Assessment, 5(1), p. 1. doi: 10.3109/21556660.2016.1163263.
 96. Bunga, Ervan JR. et al. (2018) 'The Effect of Pyridoxine On Prostaglandin Plasma Level In Patients With Primary Dysmenorrhea', *Indonesian Journal of Obstetrics and Gynecology*.<https://www.researchgate.net/publication/328373051>. DOI:[10.32771/inajog.v6i4.848](https://doi.org/10.32771/inajog.v6i4.848).
 97. Jouanne, M.; Oddoux, S.; Noël, A.; Voisin-Chiret, A.S. Nutrient Requirements during Pregnancy and Lactation. Nutrients 2021, 13, 692. <https://doi.org/10.3390/nu13020692>.
 98. Khezri, Marzieh Beigom, MD; Nasseh, Nahid, MD; Soltanian, Ghodratollah, MD. The comparative preemptive analgesic efficacy of addition of vitamin B complex to gabapentin versus gabapentin alone in women undergoing cesarean section under spinal anesthesia: A prospective randomized double-blind study. Medicine 96(15):p e6545, April 2017. | DOI: 10.1097/MD.0000000000006545
 99. Mibielli MA, Geller M, Cohen JC, et al. Diclofenac plus B vitamins versus diclofenac monotherapy in lumbago: the DOLOR study. Curr Med Res Opin 2009;25:2589–99.
 100. Terán F, Medina R, Reyes-Granados V. Synergistic antinociceptive interaction between acetaminophen or metamizol and B vitamins in the formalin test. Drug Dev Res 2006;66:286–94.
 101. Beltrán-Montoya JJ, Herreras-Canedo T, Arzola-Paniagua A, et al. A randomized, clinical trial of ketorolac trometamine vs ketorolac trometamine plus complex B vitamins for cesarean delivery analgesia. Saudi J Anasth 2012;6:207–11.
 102. Sung B, Lim G, Mao J, Altered expression and uptake activity of spinal glutamate transporters after nerve injury contribute to the pathogenesis of neuropathic pain in rats, *J. Neurosci* 23(7) (2003) 2899–910.



Cavaliere C, Cirillo G, Rosaria Bianco M, Rossi F, De Novellis V, Maione pa M, Gliosis alters expression and uptake of spinal glial amino acid porters in a mouse neuropathic pain model, *Neuron Glia Biol.* 3(2) (2007) 53.

104. Le Coz GM, Fiatte C, Anton F, Hanesch U, Differential neuropathic pain sensitivity and expression of spinal mediators in Lewis and Fischer 344 rats, *BMC Neurosci.* 15 (2014) 35.
105. Yuan Y, Zhao Y, Shen M, Wang C, Dong B, Xie K, Yu Y, Yu Y, Spinal NLRP3 inflammasome activation mediates IL-1 β release and contributes to remifentanil-induced postoperative hyperalgesia by regulating NMDA receptor NR1 subunit phosphorylation and GLT-1 expression in rats, *Mol. Pain* (2022) 17448069221093016.





REKOMENDASI PERSETUJUAN ETIK

Nomor : 986/UN4.6.4.5.31/ PP36/ 2023

Tanggal: 29 Desember 2023

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH23120915	No Sponsor	
Peneliti Utama	dr. Felicia Tarang	Sponsor	
Judul Peneliti	Pengaruh Vitamin B1, B6 Dan B12 Terhadap Intensitas Nyeri Dan Kadar Glutamat Dalam Darah Pada Operasi Seksio Sesarea		
No Versi Protokol	1	Tanggal Versi	16 Desember 2023
No Versi PSP	1	Tanggal Versi	16 Desember 2023
Tempat Penelitian	RSUD Batara Siang Pangkep		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku 29 Desember 2023 sampai 29 Desember 2024	Frekuensi review lanjutan
Ketua KEP Universitas Hasanuddin	Nama Prof. dr. Muh Nasrum Massi, PhD, SpMK, Subsp. Bakt(K)	Tanda tangan	
Sekretaris KEP Universitas Hasanuddin	Nama dr. Firdaus Hamid, PhD, SpMK(K)	Tanda tangan	

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Lapor SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah



laporan akhir setelah Penelitian berakhir
yimpangan dari protokol yang disetujui (protocol deviation / violation)
peraturan yang ditentukan