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DAFTAR PUSTAKA

Ahmad, M. R., & Hanna, H. (2014). Effect of equiosmolar solutions of hypertonic sodium lactate versus mannitol in craniectomy patients with moderate traumatic brain injury. *Medical Journal of Indonesia*, *23*(1), 30. https://doi.org/10.13181/mji.v23i1.686

Arifianto, M. R., Ma'ruf, A. Z., & Ibrahim, A. (2016). Efficacy Comparison of Mannitol and Hypertonic Saline for Traumatic Brain Injury (TBI) Treatment. *Bali Medical Journal*, *5*(3), 170. https://doi.org/10.15562/bmj.v5i3.281

Arief Sjamsul, *Radikal Bebas*, Bagian Ilmu Kesehatan Anak Fakultas Kedokteran Universitas Airlangga Rumah Sakit dr Soetomo Surabaya, 2003: 1-9.

Aloisi, F., Care, A., Borsellino, G., Gallo, P., Rosa, S., Bassani, A., *et al*. (1992). Production of hemolymphopoietic cytokines (IL-6, IL-8, colony-stimulating factors) by nor- mal human astrocytes in response to IL 1beta and tumor necrosis factor- alpha. J. Immunol. 149, 2358–2366.

Bartnik, B.L., Lee, S.M., Hovda, D.A., and Sutton, R.L. (2007). The fate of glucose during the period of decreased metabolism after fluid percussion injury: a13C NMRstudy. *J. Neurotrauma* 24,1079–1092.doi:10.1089/neu.2006.0210

Bartnik, B.L., Sutton, R.L., Fukushima, M., Harris, N.G., Hovda, D.A., and Lee, S.M. (2005). Up regulation of pentose phosphate pathway and preservation of tricarboxylic acid cycle eflux after experimental brain injury. *J. Neurotrauma* 22, 1052–1065.doi:10.1089/neu.2005.22.1052

Betancur-Calderón, J. M., Veronesi-Zuluaga, L. A., & Castaño-Tobón, H. F. (2017). Traumatic brain injury and treatment with hypertonic sodium lactate. Will it become the best management alternative? *Colombian Journal of Anesthesiology*, *45*(S 2), 51–57. https://doi.org/10.1016/j.rcae.2017.10.002

Bisri, T., Utomo, B. A., & Fuadi, I. (2016). Exogenous lactate infusion improved neurocognitive function of patients with mild traumatic brain injury. *Asian Journal of Neurosurgery*, *11*(2), 151–159. https://doi.org/10.4103/1793-5482.145375

Brustovetsky, N., Brustovetsky, T., Jemmerson, R. and Dubinsky, J.M. 2002, Calcium induced cytochrome c release from CNS mitochondria is associated with the permeability transition and rupture of the outer membrane, Journal of neurochemistry, 80 (2): 207–18. Cernak, I. 2005, Animal Models of Head Trauma, The Journal of the American Society for Experimental NeuroTherapeutics, 2: 410–422.

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Carpenter, K.L., Jalloh, I., Gallagher, C.N., Grice, P., Howe, D.J., Mason, A., *et al*. (2014). (13) C-labelled microdialysis studies of cerebral metabolism in TBI patients. *Eur.J.Pharm.Sci.* 57,87–97.doi: 10.1016/j.ejps.2013.12.012

Casey PA, Mckenna MC, Fiskum G, Saraswati M, Robertson Cl. Early and sustained alterations in cerebral metabolism after traumatic brain injury in immature rats. J Neurotrauma. 2008; 25:603-14.

Castro MA, Beltran FA, Brauchi S, Concha II. A metabolic switch in brain; glucose and lactate metabolism modulation by ascorbic acid. J Neurochem. 2009; 110:423-40

Chiry O, Fishbein WN, Merezhinskaya N, Clarke S, Galuske R, Magistretti PJ, *et al*. Distribution of the monocarboxylate transporter MCT2 in human cerebral cortex: An immunohistochemical study. Brain Res. 2008; 1226:61-9.

Chiry O, Pellerin L, Monnet-Tschudi F, Fishbein WN, Merezhinskaya N, Magistretti PJ, *et al*. Expression of the mono carboxylate transporter MCT1 in the adult human brain cortex. Brain Res. 2006; 1070:65-70.

Clark, R. S. B., Chen, J., Watkins, S. C., Kochanek, P. M., Chen, M., Stetler, R. A., Loeffert, J. E., & Graham, S. H. (1997). Apoptosis-Suppressor Gene bcl-2 Expression after Traumatic Brain Injury in Rats. *The Journal of Neuroscience*, *17*(23), 9172–9182. https://doi.org/10.1523/JNEUROSCI.17-23-09172.1997

David A. Bender, PhD & Peter A. Mayes, PhD, DSc, Rodwell. Harper's Illustrated Biochemistry, 30th edition, section IV, Metabolism of Carbohydrates. 2015. 139-210

De Waal Malefyt, R., Abrams, J., Bennett, B., Figdor, C. G., and De Vries, J.E. (1991). Interleukin10 (IL-10) inhibits cytokine synthesis by human monocytes an auto regulatory role of IL-10 produced by monocytes. J. Exp.Med. 174, 1209 1220.

D'Andrea, A., Aste-Amezaga, M., Valiante, N. M., Ma, X., Kubin, M., and Trinchieri, G. (1993). Interleukin-10 (IL-10) in hibits human lymphocyte interferon gamma production by suppressing natural killer cell stimulatory factor/IL-12 synthesis in accessory cells. J. Exp. Med. 178, 1041–1048.

Dusick, J.R., Glenn, T.C., Lee, W.N., Vespa, P.M., Kelly, D.F., Lee, S.M., *et al*. (2007). Increased pentosephosphate pathway flux after clinical traumatic brain injury: a [1,2-13C2] glucose labeling study in humans. *J. Cereb.BloodFlow Metab.* 27,1593–1602.doi: 10.1038/sj.jcbfm.9600458

Evans, R. W. (2006). *Neurology and Trauma* (2nd ed.). Oxford university press.

Feuerstein, G. Z., Liu, T., & Barone, F. C. (1994). Cytokines, inflammation, and brain injury: Role of tumor necrosis factor-alpha. In *CEREBROVASC.BRAIN METAB.REV.*

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Fiorentino, D. F., Zlotnik, A., Mosmann, T. R., Howard, M., and O'Garra, A. (1991). IL-10 inhibits cytokine production by activated macrophages. J. Immunol. 147, 3815–3822. Foda, M. A., and Marmarou, A. (1994). A new model of diffuse brain injury in rats. Part II: morphological characterization. J. Neurosurg. 80, 301 313.

Gallagher, C. N., Carpenter, K. L. H., Grice, P., Howe, D. J., Mason, A., Timofeev, I., Menon, D. K., Kirkpatrick, P. J., Pickard, J. D., Sutherland, G. R., & Hutchinson, P. J. (2009). The human brain utilizes lactate via the tricarboxylic acid cycle: A 13C-labelled microdialysis and high-resolution nuclear magnetic resonance study. *Brain*. https://doi.org/10.1093/brain/awp202

Graham S, Chen J, Clark R. Bcl-2 Family Gene Products in Cerebral Ischemia and Traumatic Brain Injury. Journal of Neurotrauma. 2000;17(10):831-841.

Greenberg, M. S. (2019). Handbook of Neurosurgery. In *Handbook of Neurosurgery*. https://doi.org/10.1055/b-006-149702

Gruber, M.F, Williams, C.C., and Gerrard, T.L. (1994). Macrophage-colony stimulating Factor expression by anti-CD45 stimulated human monocytes is transcriptionally upregulated by IL-1beta and inhibited by IL-4 and IL-10. J. Immunol. 152, 1354–1361.

Hanna, Ahmad MR. Effect of equiosmolar solutions of hypertonic sodium lactate versus mannitol in craniectomy patients with moderate traumatic brain injury. Fakultas Kedokteran Universitas Hasanuddin. Med J Indonesia. 2014;23;30–5.

Henry, S., Brasel, K., & Stewart, R. (2018). *Advanced trauma life support. American College of Surgeons* (tenth edition). Chicago

Hetz, C. (2018). *BCL-2 Protein Family: Essential Regulator of Cell Death* New York, NY: Landes Bioscience and Springer Science Business Media, LLC; 2010.

Ide, K., Schmalbruch, I.K., Quistorff, B., Horn, A., andSecher, N. H. (2000). Lactate, glucose and O2 uptake in human brain during recovery from maximal exercise. *J.Physiol*. 522 (Pt1),159–164.doi:10.1111/j.1469-7793. 2000.t01-2- 00159.xm

Jain, K. K. (2011). The handbook of neuroprotection. In *The Handbook of Neuroprotection*. https://doi.org/10.1007/978-1-61779-049-2

Jalloh, I., Helmy, A., Shannon, R.J., Gallagher, C.N., Menon, D.K., Carpenter, K.L., *et al*. (2013). Lactate uptake by the injured human brain: evidence from an arteriovenous gradient and cerebral microdialysis study. *J. Neurotrauma* 30, 2031–2037.doi:10.1089/neu.2013.2947

Kobeissy, F. H. (2015). Brain Neurotrauma Molecular, Neurophysiology, and Rehabilitation Aspect. In *Brain Neurotrauma*. https://doi.org/10.1201/b18126

Ekspresi TNF - Alfa dan BCL - 2 Pada Model Cedera Otak Traumatik Dengan Menggunakan Tikus Albino
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Lee *et al*., 2004 Lee, L.L., Galo, E., Lyeth, B.G., Muizelaar, J.P. and Berman, R.F. 2004, Neuroprotection in the rat lateral fluid percussion model of traumatic brain injury by SNX-185, an N-type voltage-gated calcium channel blocker, Exp Neurol, 190: 70–78.

Levasseur, J. E., Alessandri, B., Reinert, M., Clausen, T., Zhou, Z., Altememi, N., & Bullock, M. R. (2006). Lactate, not glucose, up-regulates mitochondrial oxygen consumption both in sham and lateral fluid percussed rat brains. *Neurosurgery*. https://doi.org/10.1227/01.NEU.0000245581.00908.AF

Marmarou, A., Abd-Elfattah Foda, M. A., Van den Brink, W., Campbell, J., Kita, H., & Demetriadou, K. (1994). A new model of diffuse brain injury in rats. Part I: Pathophysiology and biomechanics. *Journal of Neurosurgery*. https://doi.org/10.3171/jns.1994.80.2.0291

Martin, J. H. (2012). Neuroanatomy Text and Atlas, 4th ed. In *Uma ética para quantos?*

Millet, A., Cuisinier, A., Bouzat, P., Batandier, C., Lemasson, B., Stupar, V., Pernet-Gallay, K., Crespy, T., Barbier, E. L., & Payen, J. F. (2018). Hypertonic sodium lactate reverses brain oxygenation and metabolism dysfunction after traumatic brain injury. *British Journal of Anaesthesia*. https://doi.org/10.1016/j.bja.2018.01.025

Murray, R. K., Granner, D. K., Mayes, P. A., & Rodwell, V. W. (2018). Harper's Illustrated Biochemistry (31st Edition). In *Biochemical Education*.

Nguyen, R., Fiest, K. M., McChesney, J., Kwon, C.-S., Jette, N., Frolkis, A. D., Atta, C., Mah, S., Dhaliwal, H., Reid, A., Pringsheim, T., Dykeman, J., & Gallagher, C. (2016). The International Incidence of Traumatic Brain Injury: A Systematic Review and Meta-Analysis. *Canadian Journal of Neurological Sciences / Journal Canadien Des Sciences Neurologiques*, *43*(6), 774–785. https://doi.org/10.1017/cjn.2016.290

Peeters, W., van den Brande, R., Polinder, S., Brazinova, A., Steyerberg, E. W., Lingsma, H. F., & Maas, A. I. R. (2015). Epidemiology of traumatic brain injury in Europe. *Acta Neurochirurgica*, *157*(10), 1683–1696. https://doi.org/10.1007/s00701-015-2512-7

Pellerin L. Lactate as a pivotal element in neuron–glia metabolic cooperation. Neurochem Intern. 2003;43 331-8.

Phaniendra, A., Jestadi, D. B., & Periyasamy, L. (2015). Free Radicals: Properties, Sources, Targets, and Their Implication in Various Diseases. In *Indian Journal of Clinical Biochemistry*. https://doi.org/10.1007/s12291-014-0446-0

Raghupathi R, Fernandez S, Murai H, Trusko S, Scott R, Nishioka W et al. BCL-2 Overexpression Attenuates Cortical Cell Loss after Traumatic Brain Injury in Transgenic Mice. Journal of Cerebral Blood Flow & Metabolism. 1998;18(11):1259-

UNIVERSITAS GADJAH MADA
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1269.

Reinhard, R. (2004). *Color Atlas of Neurology* (2nd ed.). Thieme.

Rice, A.C., Zsoldos, R., Chen, T., Wilson, M.S., Alessandri, B., Hamm, R.J., *et al*. (2002). Lactate administration attenuates cognitive deficits following traumatic brain injury. *Brain Res*. 928,156–159.doi:10.1016/S0006-8993(01)03299-1

Rockswold GL, Solid CA, Paredes-Andrade E, Rockswold SB, Jancik JT, Quickel RR. Hypertonic saline and its effect on intracranial pressure, cerebral perfusion pressure, and brain tissue oxygen. Neurosurgery. 2009;65(6):1035‑42.

Sai Ambika Tadepalli, Zsolt Kristóf Bali, Nóra Bruszt, Lili Veronika Nagy, Krisztina Amrein, Bálint Fazekas, András Büki, Endre Czeiter, István Hernádi. Long-term cognitive impairment without diffuse axonal injury following repetitive mild traumatic brain injury in rats doi: https://doi.org/10.1101/695718

Sastrodiningrat, A. G. (2012). *NEUROSURGERY* (1st ed.). USU Press.

Shohami, E. (1999). Dual role of tumor necrosis factor alpha in brain injury. *Cytokine & Growth Factor Reviews*, *10*(2), 119–130. https://doi.org/10.1016/S1359-6101(99)00008-8

Silver, J. M., McAllister, T. W., & Yudofsky, S. C. (2014). *Textbook of traumatic brain injury : second edition* (2nd ed.). american psychiatric publishing.

Standring, S. (2016). Gray's anatomy 41st edition: The anatomical basis of clinical practice. In *Gray's Anatomy*.

Stiefel MF, Udoetuk JD, Spiotta AM, Gracias VH, Goldberg A, Maloney-Wilensky, dkk. Conventional neurocritical care and cerebral oxygenation after traumatic brain injury. J Neurosurg. 2006;105(5):68-75.

Timofeev, I., Carpenter, K.L., Nortje, J., Al-Rawi, P.G., O'Connell, M.T., Czos nyka, M., *et al*.(2011a). Cerebral extra cellular chemistry and outcome following traumatic brain injury: a microdialysis study of 223 patients. *Brain* 134(Pt2), 484–494.doi: 10.1093/brain/awq353

Timofeev, I., Czosnyka, M., Carpenter, K.L., Nortje, J., Kirkpatrick, P.J., Al-Rawi, P.G., *et al*. (2011b). Interaction between brain chemistry and physiology after traumatic brain injury: impact of autoregulation and microdialysis catheter location. *J. Neurotrauma* 28,849–860.doi:10.1089/neu.2010.1656

Timofeev, I., Nortje, J., Al-Rawi, P.G., Hutchinson, P.J., andGupta, A.K. (2013). Extra cellular brain pH with or without hypoxiaisa marker of profound metabolic derangement

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and increased mortality after traumatic brain injury. *J. Cereb.BloodFlowMetab.* 33,422–427.doi: 10.1038/jcbfm.2012.186Tyson, R. L., Gallagher, C., and Sutherland, G. R. (2003). 13C - Labeled substrates and the cerebral metabolic compartementalization of acetate and lactate. *Brain Res.* 992,43 - 52. doi:10.1016/j.brainres.2003.08.027

White, H., Cook, D., & Venkatesh, B. (2006). The use of hypertonic saline for treating intracranial hypertension after traumatic brain injury. In *Anesthesia and Analgesia*. https://doi.org/10.1213/01.ane.0000217208.51017.56

Winn, H. R. (2017). Youmans & Winn Neurological Surgery. In *Youmans & Winn Neurological Surgery*. Elsevier Health Sciences.

Wong, J., Hoe, N., Zhiwei, F., & Ng, I. (2005). Apoptosis and Traumatic Brain Injury. *Neurocritical Care*, *3*(2), 177-182. https://doi.org/10.1385/ncc:3:2:177

Woodcock Thomas, Cristina Maria, 2013, The role of markers of inflammation in traumatic brain injury, Fontiersin.org, Australia

Xiong, Y., Gu, Q., Peterson, P. L., Muizelaar, J. P., and Lee, C. P. (1997). Mitochondrial dysfunction and calcium pertubation induced by traumatic brain injury. *J. Neourotrauma* 14, 23 - 34. doi:10.1089/neu.1997.14.23

Zasler, N. D., Katz, D. I., & Zafonte, R. D. (2007). Brain Injury Medicine. In *Journal of Head Trauma Rehabilitation* (Vol. 22, Issue 6). https://doi.org/10.1097/01.htr.0000300238.28737.54

Ziebell & Morganti-Kossman 2010 Ziebell, J.M. and Morganti-Kossmann, M.C. 2010, Involvement of Pro- and Anti-Inflammatory Cytokines and Chemokines in the Pathophysiology of Traumatic Brain Injury, *The Journal of the American Society forExperimental NeuroTherapeutics*, **7**: 22–30.