

REFERENCES

- Adikwu, E., O. Deo, O.B. Geoffrey, and D.A. Enimeya. 2013. Lead Organ and Tissue Toxicity: Roles of Mitigating Agents (Part 1). *British J Pharm Toxicol.* 4(6): 232-240.
- Ahmad, M.Z., M. Ali, and S. R. Mir. 2012. Anti-Diabetic Activity of *Ocimum sanctum* L. Roots and Isolation of New Phytoconstituents Using Two-Dimensional Nuclear Magnetic Resonance Spectroscopy. *J Pharmacogn Phytother.* 4:75–85.
- Assi, M. A., M. N. M. Hezme, A. W. Haron, M. Y. Sabri, and M. A., Rajion. 2016. The Detrimental Effects of Lead on Human and Animal Health. *Veterinary World.* 9(6): 660–671.
- Basith, M. A., E. Listyaningsih, and S. Handayani. 2016. Gambaran Histologis Sel Ginjal Mencit (*Mus musculus*) yang Diinduksi Parasetamol Ditambahkan Ekstrak Daun Kemangi (*Ocimum sanctum*). *Syifa MEDIKA.* 7(1).
- Bhattacharya, A., A. Aggarwal, N. Sharma, and J. Cheema. 2014. Evaluation of Some Anti-oxidative Constituent of Three Species of *Ocimum*. *International Journal of Life Sciences.* 8(5): 14-17.
- Bombardelli, E. 1991. *Technologies for The Processing of Medical Plant.* CRC Press. Florida.
- Craan, A., M. M. Anwar, and A. Pan. 1986. Segmental and Intracellular Distribution of Lead in Rat Kidney and Salivary Glands. *Toxicology.* 42(3): 157–170.
- Cui, B., S. Liu, Q. Wang, and X. Lin. 2012. Effect of β -Carotene on Immunity Function and Tumour Growth in Hepatocellular Carcinoma Rats. *Molecules.* 17: 8595-8603.
- Darmono. 2001. *Lingkungan Hidup dan Pencemaran: Hubungannya dengan Toksikologi Senyawa Logam.* Universitas Indonesia Press. Jakarta.
- Das, P. and S. Pal. 2017. Lead (Pb), A Threat to Protein Metabolic Efficacy of Liver, Kidney, and Muscle in Mice. *Comparative Clinical Pathology.* 26(4): 875–883.
- Devi, P.U. and A. Ganasoundari. 1999. Modulation of Glutathione and Antioxidant Enzymes by *Ocimum sanctum* and its Role in Protection Against Radiation Injury. *Ind. J. Exp. Biol.* 37: 262-268.
- Devra, D. K., K. C. Mathur, R. P. Agrawal, I. Bhadu, S. Goyal, and V. Agarwal. Effect of Tulsi (*Ocimum sanctum* Linn) on Clinical and Biochemical Parameters of Metabolic Syndrome. *J Nat Remedies.* 12(1): 63–67

- Engin, K. N. 2009. Alpha-tocopherol: Looking Beyond an Antioxidant. *Molecular Vision Biology and Genetics in Vision Research*. 15: 855-860.
- Ernst, A. A., M. L. Haynes, and T. G. Nick. 1999. Usefulness of The Blood Urea Nitrogen/Creatinine Ratio in Gastrointestinal Bleeding. *Am J Emerg Med*. 17(1): 70-72.
- Flora, G., D. Gupta, and A. Tiwari. 2012. Toxicity of Lead: A Review with Recent Updates. *Interdiscip Toxicol*. 5(2): 47-58.
- Flora, S. J. S. 2009. Structural, Chemical and Biological Aspects of Antioxidants for Strategies Against Metal and Metalloid Exposure. *Oxidative Medicine and Cellular Longevity*. 2(4): 191–206.
- Flora, S. J. S. and V. Pachauri. 2010. Chelation in Metal Intoxication. *International Journal of Environmental Research and Public Health*. 7(7): 2745–2788.
- Flora, S. J. S. 2011. Arsenic-induced Oxidative Stress and Its Reversibility. *Free Radic Biol Med*. 51(2): 257-281.
- Ganong. 2002. *Reviews of Medical Physiology* 23th edition, The Mac Grow Hill Company. Departement of Physiology, University of California, San Fransisco.
- Garcia-Niño, W. R. and J. Pedraza-Chaverri. 2014. Protection Effect of Curcumin Against Heavy Metal-induce Liver Damage. *Food and Chemical Toxicology*. 69: 182-201.
- Grant, L. D. 2008. *Lead and Compounds Environmental Toxicants: Human Exposures and Their Health Effects* 3rd ed. Wiley Hoboken NJ.
- Gupta, C. 2007. *Veterinary toxicology*. In: *Basic and Clinical Principles* 2nd ed. Elsevier.
- Guyton, A. C., and J. E. Hall. 2007. *Guyton and Hall Textbook of Medical Physiology* 13th Edition. PA Elsevier.
- Handa, S. S., S. P. S. Khanuja, G. Longo, and D. D. Rakesh. 2008. *Extraction Technologies for Medicinal and Aromatic Plants* 1st edition no. 66. Italy: United Nations Industrial Development Organization and the International Centre for Science and High Technology.
- Harborne, J. B. 1973. *Phytochemical Methods A Guide to Modern Techniques of Plant Analysis*. Chapman and Hall Ltd 11 New Fetter Lane, London.
- Hariana, A. 2007. *Tumbuhan Obat dan Khasiatnya Seri 2*. Penerbit Penebar Swadaya, Jakarta.
- Henry, J. B. 2001. *Clinical Diagnosis and Management by Laboratory Methods*. W. B. Saunders Company.

- Hsu, P. C. and Y. L. Guo. 2002. Antioxidant nutrients and Lead Toxicity. *Toxicology*. 180: 33-44.
- Hu, L., W. Yu, Y. Li, N. Prasad, and Z. Tang, Z. 2014. Antioxidant Activity of Extract and Its Major Constituents from Okra Seed on Rat Hepatocytes Injured by Carbon Tetrachloride. *BioMed Research International*. 2: 1–9.
- Jia, Q, X. Ha, Z. Yang, L. Hui, and X. Yang. 2012. Oxidative Stress: A Possible Mechanism for Lead-induced Apoptosis and Nephrotoxicity. *Toxicol Mech Methods*. 22: 705-10.
- Karamala, S. K., C. Srilatha, Y. Anjaneyulu, T. S. C. Rao, D. S. Vasulu, and A. P. Pidugu. 2011. Hematobiochemical Changes of Lead Poisoning and Amelioration with *Ocimum sanctum* in Wistar Albino Rats. *Veterinary World*. 4(6): 260-263.
- Khan, M. S. H., M. Mostofa, M. S. Jahan, M. A. Sayed, and M. A. Hossain. 2008. Effect of Garlic and Vitamin B-complex in Lead Acetate Induced Toxicities in Mice. *Bangladesh Journal of Veterinary Medicine*. 6(2): 203-210.
- Kim, K. S., C. H. Kang, and J. Y. Kim. 2015. Availability of Blood Urea Nitrogen/Creatinine Ratio in Gastrointestinal Bleeding with Melena in Children. *Pediatr Gastroenterol Hepatol Nutr*. 18(1): 30-38.
- Kothari, S. K., A. K. Bhattacharya, S. Ramesh, S. N. Garg, and S. P. S. Khanuja. 2005. Volatile Constituents in Oil from Different Plant Parts of Methyl Eugenol-rich *Ocimum tenuiflorum* Grown in South India. *Journal of Essential Oil Research*. 17(6): 656–658.
- Kusriningrum, R. S. 2012. Perancangan Percobaan. Universitas Airlangga Surabaya.
- Liu, J. 1995. Pharmacology of Oleandolic Acid and Ursolic Acid. *J. Ethnopharmacol*. 49: 57-68.
- Luis, M., Ortega, and A. Swati. 2012. Metabolic Acidosis and Progression of Chronic Kidney Disease: Incidence, Pathogenesis, and Therapeutic Options. *Nephrology and Hypertension*. Allegheny General Hospital. Spanish Nephrology Society. 32(6): 724-730.
- Mandal, V. and M. H. Yogesh. 2007. Microwave Assisted Extraction – An Innovative and Promising Extraction Tool for Medicinal Plant Research. *Pharmacognosy Rev*. 1: 7-18.
- Mangoting, D. 2008. Tanaman Lalap Berkhasiat Obat. Penerbit Penebar Swadaya, Jakarta.
- Maslachah, L., M. Sukmanadi, S. Farida, R. M. Sofaria, and S. Rahmi. 2001. Pengaruh Pemberian Kombinasi Vitamin E dan β Karoten Terhadap Sifat

- Hepatotoksik Parasetamol Melalui Interaksi Biotransformasi. *Jurnal Kedokteran Yarsi*. 9: 95-100.
- Mishra J., R.K. Srivastava, S.V. Shukla, and C.S. Raghav. 2007. Screening of Medicinal Plant Extracts for Antioxidant Activity. *Journal of Medicinal Plants Research*. 3(8): 608-612.
- Mitruka, B. M. and H.M. Rawnsley. 1981. *Clinical, Biochemical, and Hematological Reference Values in Normal Experimental Animals and Normal Humans*. Masson Publishing New York.
- Monteiro, H., E. H. Bechara, and D. P. Abdalla. 1991. Free Radicals Involvement in Neurological Porphyrins and Lead Poisoning. *Molecular and Cellular Biochemistry*. 103(1): 73-83.
- Muniroh, L., T. S. Nindya, S. Martini, and R. Solfaine. 2014. Effect of *Plectranthus amboinicus* Extract on BUN and Creatinine Levels and Cellular Response Proinflammatory Factors TNF- α and IL-1 β on Gout Arthritis Patients. *Makara J. Health Res*. 18(3): 113-118.
- Nurliana, S. Estuningsih, Sugito, and D. Masyitha. 2014. Stabilitas Mikrob Usus, Histologi Hati dan Ginjal Mencit Setelah Pemberian Ekstrak Plieku Bumbu Masak Tradisional Aceh. *Jurnal Veteriner*. 3: 370-379.
- Nurliyana R, I. S. Zahir, K. M. Suleiman, M. R. Aisyah, and K. K. Rahim. 2010. Antioxidant Study of Pulps and Peels of Dragon Fruits: A Comparative Study. *International Food Research Journal*. 17: 367-375.
- Padayatty, S. J., A. Katz, Y. Wang, P. Eck, O. Kwon, J. H. Lee, S. Chen, C. Corpe, A. Dutta, S. K. Dutta, and M. Levine. 2003. Vitamin C as an Antioxidant: Evaluation of Its Role in Disease Prevention. *Journal of the American College of Nutrition*. 22(1): 18-35.
- Palar, H. 1994. *Pencemaran dan Toksikologi Logam Berat*. Jakarta: Rineka Cipta.
- Paget, G. E. and J.M. Barnes. 1964. Evaluation of Drug Activities, in: Lawrence D.R and Bachrach AL. *Pharmacometrics* New York Academic Press. 1: 161.
- Panda, V. S. and S. R. Naik. 2009 Evaluation of Cardioprotective Activity of *Ginkgo biloba* and *Ocimum sanctum* in Rodents. *Altern Med Rev*. 14: 161-171.
- Pratap M., M. Jyothi, and G. Baburao. 2017. Nephroprotective Effect of Ginger (*Zingiber Officinale*) Extract Against Lead Induced Renal Toxicity In Male Albino Rats. *International Journal of Recent Scientific Research*. 8(12): 22523-22528.
- Pehlivan, F. E. 2017. *Vitamin C: An Antioxidant Agent*. Intech Open Science.
- Putra, B. K. 2019. Efek Preventif Ekstrak Kulit Buah Naga Merah (*Hylocereus polyhizus*) Terhadap Kadar Malondialdehide dan Berat Testis pada Mencit

- (*Mus musculus*) Terpapar Kadmium Klorida [Thesis]. Fakultas Kedokteran Hewan. Universitas Airlangga.
- Rana, M. N., J. Tangpong, and M. Rahman. 2018. Toxidynamics of Lead, Cadmium, Mercury, and Arsenic-induced Kidney Toxicity and Treatment Strategy: A Mini Indian Review. *Toxicology Reports*. 5: 704-713.
- Rouhier, N., S. D. Lemaire, and J. P. Jacquot. 2008. The Role of Glutathione in Photosynthetic Organisms: Emerging Functions for Glutaredoxins and Glutathionylation. *Annual Review of Plant Biology*. 59(1): 143-166.
- Senapati, S. K., S. Dey, S. K. Dwivedi, and D. Swarup. 2001. Effect of Garlic (*Allium sativum* L.) Extract on Tissue Lead Level in Rats. *Journal of Ethnopharmacology*. 76(3): 229-232.
- Sennang, N., Sulina, A. Badji, and Hardjoeno. 2005. Laju Filtrasi Glomerulus pada Orang Dewasa Berdasarkan Tes Klirens Kreatinin Menggunakan Persamaan Cockcroft-Gault dan Modification of Diet in Renal Disease. *Journal Medicine Nus*. 24(2): 80-84.
- Sergio, A. R., M. D. Paiva, and R. M. Russel. 2013. Beta Carotene and Other Carotenoids as Antioxidants. *Journal of American College of Nutrition*. 18(5): 426-433.
- Sharma, V., P. A. K. Singh, Pandey, and A. Dhawan. 2012. Induction of Oxidative Stress, DNA Damage and Apoptosis in Mouse Liver After Sub-acute Oral Exposure to Zinc Oxide Nanoparticles. *Mutation Research*. 745: 84-91.
- Sharma, S. and B. Singh. 2014. Effects of Acute and Chronic Lead Exposure on Kidney Lipid Peroxidation and Antioxidant Enzyme Activities in BALB-C Mice (*Mus musculus*). *International Journal of Science and Research*. 3: 1564-1566.
- Shimaa, A. A. 2017. Ameliorative Potential of *Spirulina Platensis* Against Lead Acetate-induced Immuno-suppression And Kidney Apoptosis in Rats. *Ann Clin Pathol*. 5(5): 1120.
- Somaatmadja, D. 1981. Prospek Perkembangan Industri Oleoresin di Indonesia. BBIHP no. 201.
- Spitalnik, S.L., S.A. Arinsburg, and J.S. Jhang. 2015. *Clinical Pathology Board Review*. Elsevier Saunders.
- Stahl, W. and H. Sies. 1997. Carotenoids and Intercellular Communication via Gap Junctions. *International Journal Vitamin Nutrition*. 67: 364-367.
- Suanarunsawat, T., W. D. Ayutthaya, T. Songsak, and J. Rattanamahaphoom. 2009. Anti-lipidemic Actions of Essential Oil Extracted from *Ocimum*

- sanctum L.* Leaves in Rats Fed with High Cholesterol Diet. *J Appl Biomed.* 7: 45–53.
- Suanarunsawat, T., G. Anantasomboon, and C. Piewbang. 2016. Anti-diabetic and Anti-oxidative Activity of Fixed Oil Extracted from *Ocimum sanctum L.* leaves in diabetic rats. *Experimental and Therapeutic Medicine.* 11: 832-840.
- Sudarsono, D., S. Gunawan, Wahyuono, I. A. Donatus, and Purnomo. 2002. *Tumbuhan Obat II (Hasil Penelitian, Sifat-Sifat, dan Penggunaannya).* Pusat Studi Obat Tradisional Universitas Gadjah Mada.
- Sudjarwo, S. A. and Koerniasari. 2015. Protective Effects of Ethanol Extract of Mangosteen (*Garcinia mangostana L.*) Pericarp Against Lead Acetate-induced Nephrotoxicity in Mice. *Global Journal of Pharmacology.* 9(4): 385-391.
- Sudjarwo, S. A., K. Eraiko, G. W. Sudjarwo, and Koerniasari. 2019. The Potency of Chitosan-*Pinus merkusii* Extract Nanoparticle as The Antioxidant and Anti-caspase 3 on Lead Acetate-induced Nephrotoxicity in rat. *Journal of Advance Pharmaceutical Technology and Research.* 10: 27-32.
- Talka, H. and G.E. Schubert. 1965. Enzymatic Urea Determination in The Blood and Serum in The Warburg Optical Test. *Klin Wochenschr.* 1(43): 174-175.
- Tian, N., K. D. Thrasher, P. D. Gundy, M. D. Hughson, and R. D. Manning. 2005. Antioxidant Treatment Prevents Renal Damage and Dysfunction and Reduces Arterial Pressure in Salt-sensitive Hypertension. *Hypertension.* 45(5): 934–939.
- Tjitrosoepomo, G. 2002. *Morfologi Tumbuhan.* Yogyakarta: Gadjah Mada University Press.
- Toora, B. D. and G. Rajagopal. 2002. Measurement of Creatinine by Jaffe's Reaction Determination of Concentration of Sodium Hydroxide Required for Maximum Color Development in Standard, Urine and Protein Free Filtrate of Serum. *Indian J Exp Biol.* 40(3): 352-354.
- Uma, D. P. 2001. Radioprotective, Anticarcinogenic and Antioxidant Properties Of The Indian Holy Basil, *Ocimum Sanctum* (Tulasi). *Indian Journal of Experimental Biology.* 39(3): 185-190.
- Verma, S. 2016. Chemical Constituents and Pharmacological Action of *Ocimum sanctum* (Indian holy basil-Tulsi). *The Journal of Phytopharmacology.* 5(5): 205-207.
- Weiner, I. D., W.E. Mitch, and J.M. Sands. 2014. Urea and Ammonia Metabolism and The Control of Renal Nitrogen Excretion. *Clinical Journal of the American Society of Nephrology.* 10(8): 1444-1458.

- Wibowo, A. A. 2012. Pengaruh Ekstrak Daun Kemangi (*Ocimum sanctum*) terhadap Penurunan Kadar Kreatinin dalam Darah Tikus Putih (*Rattus norvegicus*) yang Diinduksi Paracetamol [Thesis]. Fakultas Kedokteran Universitas Sebelas Maret Surakarta.
- Widowati, W. 2008. Efek Toksik Logam Pencegahan dan Penanggulangan Pencemaran. Yogyakarta: Penerbit Andi.
- Xia, K. Z., N. Perveen, and N. H. Khan. 2018. Phytochemical Analysis, Antibacterial and Antioxidant Activity Determination of *Ocimum Sanctum*. *Pharmacy and Pharmacology International Journals*. 6(6): 490-497.
- Xu, J., L. J. Lian, C. Wu, X. F. Wang, W. Y. Fu, and L. H. Xu. 2008. Lead Induces Oxidative Stress, DNA Damage and Alteration Of P53, Bax and Bcl-2 Expressions in Mice. *Food and Chemical Toxicology*. 46(5): 1488-1494.
- Yuan, G., S. Dai, Z. Yin, H. Lu, R. Jia, J. Xu, X. Song, L. Li, Y. Shu, X. Zhao, Z. Chen, Q. Fan, X. Liang, C. He, L. Yin, C. Lv, Q. Lei, L. Wang, Y. Mi, X. Yu, and M. Zhang. 2014. Sub-chronic Lead and Cadmium Co-induce Apoptosis Protein Expression in Liver and Kidney of Rats. *International Journal of Clinical and Experimental Pathology*. 7(6): 2905-2914.
- Yurekli, M., M. Esrefoglu, M. Ilker Doğru, A. Doğru, M. Gul, and M. Whidden. 2009. Adrenomedullin Reduces Antioxidant Defense System and Enhances Kidney Tissue Damage in Cadmium and Lead Exposed Rats. *Environmental Toxicology*. 24(3): 279–286.
- Zafari, S., M. Shafiri, N. A. Chashmi, L. A. J. Mur. 2016. Modulation of Pb-induced Stress in *Prosopis* Shoots Through an Interconnected Network of Signaling Molecules, Phenolic Compounds and Amino Acids. *Plant Physiology and Biochemistry*. 99: 11-20.