

REFERENCES

- Abdullah, F., Vijaya, S. K. and Zurina, H. (1997). First report of *Ganoderma australe* on mango (*mangifera indica*) stumps. In: Abstract of Research Seminar 1997, Faculty of Science and Environmental Studies, Budin, H., I. Daud, M. Basri, and M. I. Yaziz (Eds.). Universiti Putra Malaysia, Serdang, Selangor, (pp 67-68).
- Alanis, A. J. (2005). Resistance to antibiotics: Are we in the post-antibiotic era?. *Archives of Medical Research*, 36, 697-705.
- Amersham Bioscience (2002). Gel filtration – principle and methods, Gel Filtration Handbook. Retrieved 2 January 2009, from http://kirschner.med.harvard.edu/files/protocols/GE_gelfiltration.pdf
- Amsterdam, D. (1996). Susceptibility testing of antimicrobial in liquid media. In Lorian, V., (ed.), *Antibiotic in laboratory medicine*, (4th ed.). (pp. 52-111). Baltimore: Williams and Wilkins.
- Ananta Kr., D. and Rajib, D. (2008). Biochemical polymorphism and its relation with some traits of importance in poultry. *Veterinary World*, 1 (7), 220-222.
- Anke, T. (1989). Basidiomycetes: A source of new bioactive secondary metabolites. *Progress in Industrial Microbiology*, 27, 51-66.
- Atkinson, G.F. (1903). *Mushrooms edible, poisonous, etc.* New York: Hafner Publishing Company.
- Bailey, J. A., and Jegger, M. J. (1992). *Colletotrichum: biology, pathology and control.*, Wallingford, United Kingdom: CAB International.
- Bailey, P.D. (1990). An introduction to peptide chemistry. England: Wiley Publisher.
- Banerjee, S. N., Emori, T. G., Culver, D. H., Gaynes, R. P., Jarvis, W. R., Horan, T., et al (1991). Secular trends in nosocomial primary bloodstream infections in the United States, 1980-1989. National Infections Surveillance System. *American Journal of Medicine*, 91, 86-89.
- Barbieri, L., Battelli, M. G. and Stirpe, S. (1993). Ribosome inactivating proteins from plants. *Biochimica et Biophysica Acta.*, 1154, 237-282.
- Barbisan, L. F., Spinardi-Barbisan, A. L. S., Moreira, E. L. T., Salvadori, D. M. F., Ribeiro, L. R. and Eira, A. F. (2003). *Agaricus blazei* (himematsutake) does not alter the development of rat diethylnitrosamine initiated hepatic preneoplastic foci. *Cancer Science*, 94, 188-192.
- Barre-Sinoussi, F. (1996). HIV as the cause of AIDS. *Lancet*, 348, 1647-1650.

- Bauer, A. M., Anderson, J. B., Cherukuri, P. F., Scott, C. D., Geer, L. Y., Gwadz, M., et al. (2005). CDD: a Conserved Domain Database for protein classification. *Nucleic Acid Research*, 1 (33), 192-196.
- Beelman, R., Mau, J. L. and Ziegler, G. (1997). Use of 10-oxo-*trans*-8-decenoic acid in mushroom cultivation. U.S. Patent No. 5,681,738. Washington, DC: U.S. Patent and Trademark Office.
- Bernheimer, A. W. and Avigad, L. S. (1979). A cytolytic protein from the edible mushroom, *Pleurotus ostreatus*, *Biochimica et Biophysica Acta (BBA)*, 585, 451-461.
- Bobek, P., Galbavy, Š. and Ozdiň, L. (1998). Effect of oyster mushroom (*Pleurotus ostreatus*) on pathological changes in dimethylhydrazine-induced rat colon cancer. *Oncology Reports*, 5, 727-730.
- Bonner, P. L. R. (2007). *Protein purification*. New York: Taylor and Francis Group.
- Brennen, C. and Porche, D. J. (1997). HIV immunopathogenesis. *The Journal of the Association of Nurses in AIDS care*, 8 (4), 7-22.
- Brian, P. W. (1951). Antibiotics produced by mushrooms, *Botanical Review*, 17, 357- 430.
- Bringans, S., Eriksen, S., Kendrick, T., Gopalakrishnakone, P., Livk, A., Lock, R. and Lipscombe, R. (2008). Proteomic analyses of the venom of *Heterometrus longimanus* (asian black scorpion). *Proteomics*, 8, 1081-1096.
- Brown, K. and Hancock, R. (2005). Cationic host defense (antimicrobial) peptides. *Immunology*, 18, 24-30.
- Burden, D. and Whitney, D. (1995a). Biotechnology; proteins to PCR: A course in strategies and lab techniques. Lebanon: Birkhauser, pp 93-107.
- Burden, D. and Whitney, D. (1995b). Biotechnology; proteins to PCR: A course in strategies and lab techniques. Lebanon: Birkhauser, pp. 125-132.
- Burn, P. (1988). Amphitropic protein: A new class of membrane proteins. *Trends in Biochemical Sciences*, 13:79-83.
- Buswell, J. A. and Chang, S. T. (1993). Edible mushrooms: Attributes and applications. In S. Chang, J. Buswell, and P. G. Miles (Eds.), *Genetics and breeding of edible mushrooms* (pp. 297-324). Amsterdam: Gordon and Breach Science Publishers.

- Cano, J., Guarro, J. and Gene, J. (2004). Molecular and morphological identification of *Colletotrichum* species of clinical interest. *Journal of Clinical Microbiology*, 42 (6), 2450-2454.
- Chang, S. T. (1993). Mushroom and mushroom biology. In S. Chang, J. Buswell, and P. G. Miles (Eds.), *Genetics and breeding of edible mushrooms* (pp. 1-11). Amsterdam: Gordon and Breach Science Publishers.
- Chang, S. T. (1995). Ganoderma – The leader production and technology of mushroom nutraceuticals. Proceeding from the 6th International Symposium Advance *Ganoderma lucidum* Research (Ed. B. K. Kim, I. H. Kim, and Y. S. Kim), pp. 43-52. The Pharmaceutical Society of Korea, Seoul, Korea.
- Chang, S. T. (1999). World production of cultivated edible and medicinal mushroom in 1997 with emphasis on *Lentinus edodes* (Berk.) Sing. in China. *International Journal of Medicinal Mushrooms*, 1, 263-282.
- Chang, S. T. (2006). The need for scientific validation of culinary-medicinal mushroom products. *International Journal of Medicinal Mushrooms*, 2, 187-195.
- Chang, S. T. and Miles, P. G. (1992). Mushroom biology – a new discipline. *Mycologist*, 6, 64-65.
- Chang, S. T. and Miles, P. G. (2004). *Mushrooms - cultivation, nutritional value, medicinal effect, and environmental impact* (2nd ed.). United States: CRC Press, pp 39–51.
- Chu, K. T., Wang, H. T., and Ng, T. B. (2006). Fungal peptides with antifungal activity. In A. J. Kastin (Ed.), *Handbook of biologically active peptides* (pp. 125-130). United States of America: Elsevier.
- Chu, K. T., Xia, L. and Ng, T. B. (2005). Pleurostrin, an antifungal peptide from oyster mushroom. *Peptides*, 26, 2098-2103.
- Cos, P., Maes, L., Vanden Berghe, D., Hermans, N., Pieters, L. and Vlietinck, A (2004). Plant substances as anti-HIV agents selected according to their putative mechanism of action. *Journal of Natural Products*, 67, 284 – 293.
- Cytrynska, M., Zdybicka-Barabas, A., Jablonski, P. and Jakubowicz, T. (2001). Detection of antibacterial polypeptide activity in situ after sodium dodecyl sulfate-polyacrylamide gel electrophoresis. *Analytical Biochemistry*, 299, 274-276.
- De Clercq, E. (2000). Current lead natural products for the chemotherapy of human immunodeficiency virus (HIV) infection. *Medical Research Review*, 20, 323 – 349.
- De Lucca, A. and Walsh, T. (1999). Antifungal peptides: Novel therapeutic compounds against emerging pathogens. *Journal of Antimicrobial Agents and Chemotherapy*, 43 (1), 1-11.

- Dempsey, C. E. (1990). The actions of melittin on membranes. *Biochimica et biophysica acta*, 1031(2), 143-161.
- Dong, Q. and Brendal, V. (2005). Computational identification of related proteins BLAST PSI-BLAST, and other tools. In J. M. Walker (Ed.), *The proteomic protocol handbook* (pp. 527-541). New Jersey, Totowa: Humana Press Inc.
- Disease Control Unit, Ministry of Health (2010). AIDS in Malaysia. Retrieved 8 February 2011, from <http://www.rumahjaireh.com/PDFs/AIDSinMalaysia2010.pdf>
- Dulger, B., Gonuz, A. and Gucin, F. (2004). Antimicrobial activity of the macrofungus *Cantharellus cibarius*. *Pakistan Journal of Biological Sciences*, 7, 1535-1539.
- El Dive, R. S., El Halawany, A. M., Ma, C. M. and Hattori, M. (2008). Anti-HIV 1-protease activity of lanostane triterpenes from the vietnamese mushroom *Ganoderma colossum*. *Journal of Natural Product*, 71(6), 1022-1026.
- Eva, J. H., Ingrid, M. R., Wim, V. H., Enno, C. I. V., and Arie, V. N. A. (1999). A critical comparison of the hemolytic and fungicidal activities of cationic antimicrobial peptides. *Federation of European Biochemical societies Letters*, 449, 105-110.
- Gao, Y., Zhou, S., Huang, M. and Xu, A. (2003). Antibacterial and antiviral value of the genus *Ganoderma* P. Karst. species (aphyllophoromycetidae): A review. *International Journal of Medicinal Mushroom*, 5, 235-246.
- Gerber, A. L., Smania, A. J., Delle Monache, F., Biachi, N. Jr. and Smania E. F. A. (2000). Triterpene and sterols from *Ganoderma australe* (Fr.) Pat. (Aphyllophoromycetidae). *International Journal of Medicinal Mushroom*, 2, 303 - 311.
- Getha, K. and S. Vikineswary, (2002). Antagonistic effects of *Streptomyces violaceusniger* strain G10 on *Fusarium oxysporum* f. sp. *cubense* race 4: Indirect evidence for the role of antibiosis in the antagonistic process. *Journal of Industrial Microbiology and Biotechnology*, 28, 303-310.
- Gomes, V. M., Carvalho, A. O., Cunha, M. D., Keller, M. N., Bloch Jr, C., Deolindo, P. et al. (2004). Purification and characterization of a novel peptide with antifungal activity from *Bothrops jararaca* venom. *Toxicon*, 45 (7), 817-827.
- Gu, C. Q., Li, J. W., Chao, F., Jin, M., Wang, X. W. and Shen, Z. Q. (2007). Isolation, identification and function of a novel anti-HSV-1 protein from *Grifola frondosa*. *Antiviral Research*, 75(3), 250-257.
- Gunde-Cimerman, N. (1999). Medicinal value of the genus *Pleurotus* (Fr.) P. Carst, (Agaricales s. l., Basidiomycetes). *International Journal of Medicinal Mushrooms*, 1, 69-80.

- Guo, Y., Wang, H. X. and Ng, T. B. (2005). Isolation of trichogin, an antifungal protein from fresh fruiting bodies of the edible mushroom *Tricholoma giganteum*. *Peptides*, 26, 575-580.
- Green, W. (1997). Molecular insight into HIV infection. In M. Sande and P. Volberdin (Eds.), *The medicinal management of AIDS* (5th ed.) (pp. 17-28). Philadelphia: W. B. Saunders.
- Hancock, R. E. W., Chapple, D. S. (1999). Antibiotic peptides. *Antimicrobial Agents and Chemotherapy*, 43, 215-220.
- Hawksworth, D. L. (2001). Mushrooms: The extent of the unexplored potential. *International Journal of Medicinal Mushrooms*, 3, 333-337.
- Hearst, M., Nelson, D., McCollum, G., Ballard, L. M., Millar, B. C., Moore, S. McClean, S., Moore, J. E. and Raol, J. R. (2010). Antimicrobial properties of protein extracts from wild mushroom fungi and native plant species against hospital pathogens. *Journal of Pharmacognosy and Phytotherapy*, 2(8), 103-107.
- Helmerhorst, E. J., Reijnders, I. M., Van 't Hof, W., Veerman, E. C. and Niew Amerongen, A. V. (1999). A critical comparison of the hemolytic and fungicidal activities of cationic antimicrobial peptides. *FEBS Letters*, 449, 105-110.
- Heukeshoven, J. and Dernick, R. (1998). Improved silver staining procedure for fast staining of sodium dodecyl sulfate gels. *Electrophoresis*, 9(1), 28-32.
- Ho, Y. W. and Nawawi, A. (1985). *Ganoderma boninense* Pat. From basal stem rot of oil palm (*Elaeis guineensis*) in Peninsular Malaysia. *Pertanika*, 8(3), 425-428.
- Howard, R. J. and Gow, N. A. R. (Eds.). (2001). *The mycota; A comprehensive treatise on fungi as experimental systems for basic and applied research, Volume VIII: Biology of the Fungal Cell*. New York: Springer, pp. 161-180.
- Iwalokun, B. A., Usen, U. A., Otunba, A. A. and Olukoya, D. K. (2007). Comparative phytochemical evaluation, antimicrobial and antioxidant properties of *Pleurotus ostreatus*. *African Journal of Biotechnology*, 6(15), 1732-1739.
- Javadpour, M. M., Juban, M. M., Lo, W. C. J., Bishop, S. M., Alberty, J. B., Cowell, S. M., Becker, C. L. and McLaughlin, M. L. (1996). De novo antimicrobial peptides with low mammalian cell toxicity. *Journal of Medicinal Chemistry*, 39, 3107 – 3113.
- Jonathan, S. G., Kigigha, L. T. and Ohimain, E. (2008). Evaluation of the inhibitory potential of eight higher Nigerian fungi against pathogenic microorganisms. *African Journal of Biomedical Research*, 11, 197-202.
- Jong, S. C. and Birmingham, J. M. (1991). Medicinal benefit of the mushroom *Ganoderma*. *Advances in Applied Microbiology*, 37, 104-132.

- Judd, R. C. (1994). Electrophoresis of peptides. In J. Walker (Ed.), *Methods in molecular biology; Basic protein and peptide protocols* (pp. 49-58). New Jersey: Human Press.
- Kaliyaperumal, M. and Kalaichelvan, P. T. (2008). *Ganoderma australe* from southern India. *Microbiological Research*, 163, 286-292.
- Karaman, I., Sahin, F., Güllüce, M., Ögütçü, H., Sengül, M. and Adıgüzel, A. (2003). Antimicrobial activity of aqueous and methanol extracts of *Juniperus oxycedrus*. *Journal of Ethnopharmacology*. 85, 213-235.
- Kaul, T.N. (2002). *Biology and Conservation of Mushrooms*. New Hampshire: Science Publisher, Inc.
- Kavanagh, F., Hervey, A. and Robbins, W. J. (1950). Antibiotic substances from basidiomycetes: VI. *Agrocybe dura*. *Proceeding of the National Academy of Sciences of the United States of America*, 36, 102-106.
- Kho, Y. S. (2008). Antimicrobial, antioxidant, and fibrinolytic activities of *Auricularia auricular-judae* (Fr.) Quel. Master of Science Thesis, University of Malaya, Kuala Lumpur.
- Khowala, S., Banerjee, P. C., Ghosh, A. K. and Sengupta, S. (1993). A hemolytic protein from cultured mycelia of mushroom, *Termitomyces clypeatus*, *Indian Journal of Experimental Biology*, 1, 45-49.
- Kim, B. K., Cho, H. Y., Kim, J. S., Kim, H. W. and Choi, E. C. (1993). Studies on constituents of higher fungi of Korea (LXVIII). Anti-tumor components of the cultured mycelia of *Ganoderma lucidum*. *Korean Journal of Pharmacology*, 24, 203-212.
- Kim, G. Y., Kim, S. H., Hwang, S. Y., Kim, H. Y., Park, Y. M., Park, S. K., et al. (2003). Oral administration of proteoglycan isolated from *Phellinus linteus* in the prevention and treatment of collagen-induced arthritis in mice. *Biological and Pharmaceutical Bulletin*, 26, 823-831.
- Kim, S. H., Song, Y. S., Kim, S. K., Kim, B. C., Lim, C. J. and Park, E. H. (2004). Anti-inflammatory and related pharmacological activities of the n-BuOH sub-fraction of mushroom *Phellinus linteus*. *Journal of Ethnopharmacology*, 93, 141-146.
- Kinter, M. and Sherman, N. E. (2000). *Protein sequencing and identification using tandem mass spectrometry*. Canada: Wiley Interscience.
- Komoda, Y., Shimizu, M., Sonoda, Y. and Sato, Y. (1989). Ganoderic acid and its derivatives as cholesterol synthesis inhibitors. *Chemical and Pharmaceutical Bulletin*, 37, 531-533.

- Kreisel, H. Lindequist, U. and Horak, M. (1990). Distribution, ecology and immunosuppressive properties of *Tricholoma populinum* (Basidiomycetes), *Zentralblatt fur Mikrobiologie*, 145, 393–396.
- Lacks, S. A. and Springhon, S. S. (1980). Renaturation of enzymes after polyacrylamide gel electrophoresis in the presence of sodium dodecyl sulfate. *The Journal of Biological Chemistry*, 255(15), 7467-7473.
- Laemmli, U. K. and Favre, M. (1973). Gel electrophoresis of protein. *Journal of Molecular Biology*, 80, 575-599.
- Lam, L. W., Ng, T. B. and Wang, H. X. (2001). Antiproliferative and antimutagenic activities in a peptide from puffball mushroom *Calvatia caelata*. *Biochemical and Biophysical Research Communications*, 289, 744-749.
- Lam, S. K. and Ng, T. B. (2001a). First simultaneous isolation of a ribosome inactivating protein and an antifungal protein from a mushroom (*Lyophyllum shimeiji*) together with evidence for synergism of their antifungal effects. *Biochemistry and Biophysics*, 393, 271-280.
- Lam, S. K. and Ng, T. B. (2001b). Hypsin, a novel thermo stable ribosome inactivating protein with antifungal and antiproliferate activities from fruiting bodies of the edible mushroom *Hypsizigus marmoreus*. *Biochemical and Biophysical Research Communications*, 285, 1071-1075.
- Layne, E. (1957). Spectrometric and turbidimetric methods for measuring protein. *Methods in Enzymology*, 3, 447-455.
- Leong, S. K., Latiffah, Z. and Baharuddin, S. (2010). Genetic diversity of *Fusarium oxysporum* f. sp. *cubense* isolates from Malaysia. *African Journal of Microbiology Research*, 4 (11), 1026–1037.
- Levy, I., Rubin, L. G., Vasishtha, S., Tucci, V. and Sood, S. K. (1998). Emergence of *Candida parapsilosis* as the predominant species causing candidemia in children. *Clinical Infectious Diseases*, 26, 1086–1088.
- Liebler, D. C. (2002). Introduction to proteomics - tools for the new biology. Totowa, New York: Humana Press.
- Linardou, H., Deonarain, M. P., Spooner R. A. and Epenetos, A. A. (1994). Deoxyribonuclease I (DNase I). A novel approach for targeted cancer therapy. *Cell Biophysics*, 24–25, 243–248.
- Lindequist, U., Niedermeyer, T. H. J. and Julich, W. D. (2005). The pharmacological potential of mushrooms. *eCAM*, 2(3), 285-299.
- Liu, Q., Wang, H. X. and Ng, T. B. (2004). Isolation and characterization of a novel lectin from the wild mushroom *Xerocomous spadiceus*. *Peptide*, 25, 7-10.

- Lomberh, M. L., Solomko, E. F., Buchalo, A. S. and Kirchhoff, B. (2002). Studies of medicinal mushrooms in submerged cultures. *Mushroom Biology and Mushroom Products*, 367-377. (ISBN 968-878-105-3).
- Lupetti, A., Tavanti, A., Davini, P., Ghelardi, E., Corsini, V., Merusi, I., et al. (2002). Horizontal transmission of *Candida parasilopsis* candidemia in a neonatal intensive care unit. *Journal of Clinical Microbiology*, 40, 2363-2369.
- Lv, H., Kong, Y., Yao, Q., Zhang, B., Leng, F. W., Bian, H. J., et al. (2009). Nebrodeolysin, a novel hemolytic protein from mushroom *Pleurotus nebrodensis* with apoptosis-inducing and anti-HIV-1 effects, *Phytomedicine*, (2-3), 198-205.
- MacMillan, W. G. and Hibbitt K. G. (1969). The effect of antimicrobial proteins on the fine structure of *Staphylococcus aureus*. *Journal of General Microbiology*, 56, 373-377.
- Makovec, T. (2000). Chromatofocusing. *Biochemistry and Molecular Biology Education*, 28, 203-206.
- Marshall, S. H. and Arenas, G. (2003). Antimicrobial peptides: A natural alternative to chemical antibiotics and a potential for applied biotechnology. *Electric Journal of Biotechnology*, 6(3), 271-284.
- Mlinaric, A., Kac, J. and Pohleven, F. (2005). Screening for selected wood-damaging fungi for the HIV-1 reverse transcriptase inhibitors. *Acta Pharmacology*, 55, 69-79.
- Molero, G., Diez-Orejas, R., Navarro-Garcia, F., Monteoliva, L., Pla, J., Gil, C. et al. (1998). *Candida albicans*: genetics, dimorphism and pathogenicity. *International Microbiology*, 1, 95-106.
- Molitoris, H. P. (1994). Mushrooms in medicine. *Folia Microbiology*, 39, 91-98.
- Moller, N. P., Scholz-Ahrens, K. E., Roos, N. and Schrezenmeir, J. (2008). Bioactive peptides and proteins from foods : indication for health effects. *European Journal of Nutrition*, 47(4), 171-182.
- Moncalvo, J. M. (2000). Systemic of Ganoderma. In J. Flood, P. D. Bridge and M. Holderness (Eds.), *Ganoderma diseases of perennial crops* (pp. 23-45). Egham, UK: CABI Bioscience.
- Mothana, R. A. A., Jansen, R., Julich, W. D. and Lindequist, U. (2000). Ganomycin A and B, new antimicrobial farnesyl hydroquinones from the basidiomycete *Ganoderma pfeifferi*. *Journal of Natural Products*, 63(3), 416-418.
- Murray, P. R., Baron, E. J., Pfaller, M. A., Tenover, F. C. and Tenover, R. H. (1999). *Manual of Clinical Microbiology*. Washington DC: ASM Press. (pp 1474).

- Nair, D. G., Fry, B. G., Alewood, P., Kumar, P. P. and Kini, R. M. (2007). Antimicrobial activity of omwaprin, a new member of the waprin family of snake venom proteins. *Biochemical Journal*, 402, 93-104.
- Neuhoff, V., Arold, N., Taube, D. and Ehrhardt, W. (1988). Improved staining of proteins in polyacrylamide gels including isoelectric focusing gels with clear background at nanogram sensitivity using Coomassie Brilliant Blue G-250 and R-250. *Electrophoresis*, 9, 255-262.
- Ng, T. B., Lam Y. W. and Wang, H. X. (2003). Calcaelin, a new protein with translation-inhibiting, antiproliferative, and antimitogenic activities from the mosaic puffball mushroom *Calvatia caelata*. *Planta medica*, 69, 212-217.
- Ng, T. B. (2004). Peptides and protein from fungi. *Peptides*, 25, 1055-1073.
- Ng, T. B. (2006). Fungal ribosome inactivating proteins. In A. J. Kastin (Ed.), *Handbook of biologically active peptides* (pp. 145-148). United States of America: Elsevier.
- Ng, T. B. and Parkash, A. (2002). Hipsin, a novel ribosome inactivating protein with antifungal activity from hairy melon seeds. *Protein Expression and Purification*, 26, 211-217.
- Ng, T. B. and Wang, H. X. (2001). Panaxagin, a new protein from Chinese ginseng possesses anti-fungal, anti-viral, translation-inhibiting and ribonuclease activities. *Life Sciences*, 68, 739-749.
- Ng, T. B. and Wang, H. X. (2004a). A novel ribonuclease from fruiting bodies of the common edible mushroom *Pleurotus eryngii*. *Peptides*, 25, 1365-1368.
- Ng, T. B. and Wang, H. X. (2004b). Adustin, a small translation-inhibiting polypeptide from fruiting bodies of the wild mushroom *Polyporus adusta*. *Peptides*, 25, 689-692.
- Ng, T. B. and Wang, H. X. (2004c). Flammin and velin: new ribosome inactivating polypeptides from the mushroom *Flammulina velutipes*. *Peptides*, 25, 929-933.
- Ng, T. B. and Wang, H. X. (2004d). A homodimeric laccase with unique characteristics from the yellow mushroom *Cantharellus cibarius*. *Biochemical and Biophysical Research Communications*, 313, 37-41.
- Ng, T. B. and Wang, H. X. (2006). Fungal peptides with ribonuclease activity. In A. J. Kastin (Ed.), *Handbook of biologically active peptides* (pp. 137-144). United States of America: Elsevier.
- Ng, T. B., Chan, W. Y. and Yeung, H. W. (1992). Proteins with abortifacient, ribosome inactivating, immunomodulatory, anti tumour and anti AIDS activities from cucurbitaceae plants, *General Pharmacology*, 23, 575-590.

- Ng, T. B., Lam, S. K. and Chan, S. Y. (2002a). A ubiquitin-like peptide from the mushroom *Pleurotus sajor-caju* exhibits relatively potent translation-inhibitory and ribonuclease activities. *Peptides*, 23, 1361-1365.
- Ng, T. B., Parkash, A. and Tso, W. W. (2002b). Purification and characterization of moschins, arginine-glutamate-rich proteins with translation-inhibiting activity from brown pumpkin (*Cucurbita moschata*) seeds. *Protein Expression and Purification*, 26, 9-13.
- Ng, T. B., Ngai, P. H. K. and Xia, L. (2006a). An agglutinin with mitogenic and antiproliferative activities from the mushroom *Flammulina velutipes*. *Mycologia*, 98(2), 167-171.
- Ng, T. B., Wang, H. X. and Wan, D. C. C. (2006b). Polysaccharopeptide from the turkey tail fungus *Trametes versicolor* (l.fr) pilát inhibit human immunodeficiency virus type 1 reverse transcriptase and protease. *International Journal of Medicinal Mushroom*, 8, 39-43.
- Ngai, P. H. and Ng, T. B. (2003). Lentin, a novel potent antifungal protein from shitake mushroom with inhibitory effects on activity of human immunodeficiency virus-1 reverse transcriptase and proliferation of leukaemia cells. *Life Sciences*, 73, 3363-3374.
- Ngai, P. H. and Ng, T. B. (2006). A hemolysin from the mushroom *Pleurotus eryngii*. *Applied Microbiology and Biotechnology*, 6, 1185-1191.
- Ngai, P. H. K. and Ng, T. B. (2004). A ribonuclease with antimicrobial, antimitogenic and antiproliferative activities from the edible mushroom *Pleurotus sajor caju*. *Peptides*, 25, 11-17.
- Ngai, P. H. K., Wang, H. X. and Ng, T. B. (2003). Purification and characterization of a ubiquitin-like peptide with macrophage stimulating, antiproliferative and ribonuclease activities from the mushroom *Agrocybe cylindracea*. *Peptides*, 24, 639-645.
- Ngai, P. H. K., Zhou, Z. and Ng, T. B. (2005). Agrocybin, an antifungal peptide from the edible mushroom *Agrocybe cylindracea*. *Peptides*, 26, 191-196.
- Odds, F. C. and Baillihre Tindall, L. (eds.) (1988). *Candida and candidosis* (2nd ed). London: Baillihre Tindall.
- Pai, S. H., Jong, S. C. and Low, D. W. (1990). Usages of mushroom. *Bioindustry*, 1, 126 - 131.
- Paterson, R. R. M. (2006). *Ganoderma – A therapeutic fungal biofactory*, *Phytochemistry*, 67, 1985-2001.

- Paterson, R. R. M. and Bridge, P. D. (1994). *Biochemical techniques for filamentous fungi* United Kingdom: Centre for Agriculture and Bioscience International.
- Photita, W., Taylor, P. W. J., Ford, R., Hyde, K. D. and Lumyong, S. (2005). Morphological and molecular characterization of *Colletotrichum* species from herbaceous plants in Thailand. *Fungal Diversity*, 18, 117-133.
- Ploetz, R. C. and Pegg, K.G. (2000). Fungal diseases of the root, corm and pseudostem: Fusarium wilt. In Jones D.R. (ed). *Diseases of Banana, Abaca and Enset* (pp. 143-159). United Kingdom: CABI Publishing.
- Ponting, C. P. and Birney, E. (2005). Protein sequence analysis and domain identification. In J. M. Walker (Ed.), *The Proteomic Protocol Handbook* (pp. 527-541). New Jersey, Totowa: Humana Press Inc.
- Rai, M., Tidke, G. and Wasser, S. P. (2005). Therapeutic potential of mushrooms. *Natural Product Radiance*, 4(4), 246-257.
- Ramalingam, K. and Bello, J. (1992). Effect of permethylation on the hemolytic activity of melittin, *Biochemica. Journal*, 284, 663-666.
- Reddy, K. V. R., Yedery, R. D. and Aranha, C. (2004). Antimicrobial peptides: Premises and promise. *International journal of Antimicrobial Agents*, 24, 536-547.
- Ren, J., Shi, J., Kakuda, Y., Kim, D., Xue, S.J., Zhao, M., et al. (2007). Comparison of the phytohaemagglutinin from red kidney bean (*Phaseolus vulgaris*) purified by different affinity chromatography. *Food Chemistry*, 108(1), 394-401.
- Resources Centre, Malaysia AIDS Council (2010). AIDS in Malaysia. Retrieved on 30 June 2011, from <http://www.rumahjaireh.com/PDFs/AIDS%20in%20Malaysia%202010.pdf>
- Roberts, L. M. (2004). Australian *Ganoderma*: Identification, growth and antibacterial properties. Doctor of Philosophy Thesis, Swburne University of Technology, Melbourne.
- Rosa, L. E., Machado, K. M. G., Jacob, C. C., Capelari, M., Rosa, C. A. and Zani, C. L. (2003). Screening of Brazilian basidiomycetes for antimicrobial activity. *Mem Inst Oswaldo Cruz Rio de Janeiro*, 98, 967-974.
- Rosenberg, I. M. (1996). Protein analysis and purification. Boston: Birkhauser.
- Roupas, P., Noakes, M., Margetts, C., Keogh, J. and Taylor, P. (2010). Mushroom and health 2010: Anti-microbial and anti-viral properties, National Research Flagships. Retrieved 5 January 2011, from http://www.mushroomsandhealth.com/files/Files/E_Antimicrobial_antiviral_properties_2010.pdf.

- Samorini, G. (2001). New data on the ethnomycology of psychoactive mushrooms, *International Journal of Medicinal Mushroom*, 3, 257-278.
- Sano, M., Yoshino, K., Matsuzawa, T. and Ikekawa, T. (2002). Inhibitory effects of edible higher basidiomycetes mushroom extracts on mouse type IV allergy. *International Journal of Medicinal Mushrooms*, 4, 37-41.
- Sato, N., Zhang, Q., Ma, C. M. and Hatttori, M. (2009). Anti HIV 1 protease activity of new lanostane-type triterpenoids from *G. sinense*. *Chemical and Pharmaceutical Bulletin*, 57(10), 1076-1080.
- Selitreffnikoff, C. P. (2001). Antifungal proteins. *Applied and Environmental Microbiology* 67(7), 2883-2894.
- Shagger, H. (2006). Tricine SDS PAGE. *Nature protocols*, 1(1), 16-22.
- Smania Jr, A., Delle Monache, F., Smania E. F. A. and Cuneo, R. S. (1999). Antibacterial activity of steroidal compounds isolated from *Ganoderma applanatum* (Pers.) Pat. (Aphyllorphomycetidae) fruit body. *International Journal of Medicinal Mushrooms*, 1, 325-330.
- Smania, E. F. A., Delle Monache, F., Yunes, R. A., Paulert, R., and Smania A. (2007). Antimicrobial activity of methyl australate from *Ganoderma australe*. *Brazilian Journal of Pharmacognosy*, 17, 14-16.
- Smith, J. E., Rowan, N. J. and Sullivan, R. (2002). Medicinal mushrooms : A rapidly developing area of biotechnology for cancer therapy and other bioactivities, *Biotechnology Letters*, 24, 1839-1845.
- Stamets, P. (2000). *Growing gourmet and medicinal mushrooms* (3rd ed.). California: Ten Speed Press, Berkley. (pp 1-574).
- Stamets, P. (2002). Novel antimicrobials from mushrooms, *Herbal Gram*, 54, 1-6.
- Staprans, D. and Feinberg, M. (1997). Natural history and immunopathogenesis of HIV-1 disease, In M. Sande and P. Volberding (Eds.), *The medicinal management of AIDS* (5th ed.), (pp. 29-56). Philadelphia: W. B. Saunders.
- Stoke, J. E. and Ridgway, G. L. (1980). *Clinical bacteriology*. Edward, Arnold Ltd. London. (pp. 205-226).
- Stover, R. H. (1972). *Banana, plantain and abaca diseases*. Commonwealth Mycologica Institute, Kew, Surrey, England. (pp. 167-179).
- Suay, I., Arenal, F., Asenio, F., Basilio, A., Cabello, M., Diez, M. T., et al. (2000). Screening for basidiomycetes for antimicrobial activities. *Antonie van Leeuwenhoek*, 78, 129-139.

- Sudirman, L. I. and Mujiyati, S. (1997). Preliminary detection of antimicrobial activity of fruiting bodies' extracts of tropical *Ganoderma* sp. In: Proceedings of the 1st International Symposium on *Ganoderma lucidum* in Japan. Toyo-Igaku-sha Co. Ltd., Tokyo, pp. 154–159.
- Suetsuna, K. and Chen, J. (2001). Identification on antihypertensive peptides from peptic digest of two microalgae, *Chlorella vulgaris* and *Spirulina platensis*. *Marine biotechnology*, 3, 305-309.
- Susanto, A., Sudharto, P. S. and Purba, R. Y. (2005). Enhancing biological control of basal stem rot disease (*Ganoderma boninense*) in oil palm plantations. *Mycopathologia*, 159, 153-157.
- Tan, G. T. and Pezzuto, J. M. (1991). Evaluation of natural products as inhibitors of HIV-1 reverse transcriptase. *Journal of Natural Product*, 56, 143-154.
- Tayyab, S. and Boyce, A. N. (2006). *A journey from amino acids to proteins*. University Malaya Press, Kuala Lumpur, pp 49-50.
- Theis, T., Wedde, M., Meyer, V. and Stahl, U. (2003). The antifungal protein from *Aspergillus giganteus* causes membrane permeabilization. *Antimicrobial Agents Chemotherapy*. 47, 588-593.
- Turner, P. D. (1968). *The use of surgery as a method of treating basal stem rot in oil palms*. Kuala Lumpur: Planter, pp. 302-308.
- Turner, P. D. and Bull, R. (1967). *Disease and disorders of the oil palm in Malaysia*. Kuala Lumpur: Yau Seng Press, pp 103-116.
- Valgas, C., Machado de Souza, S., Smania, E. and Smania Jr, A. (2007). Methods to determine antibacterial activity of natural product. *Brazilian Journal of Microbiology*, 38, 369 – 380.
- Venturini, M. E., Rivera, C. S., Gonzalez, C. and Blanco, D. (2008). Antimicrobial activity of extracts of edible wild and cultivated mushrooms against foodborn bacterial strains. *Journal of Food Protection*, 8, 1701-1706.
- Voravuthikunchai, S., Lortheeranuwat, A., Jejuu, W., Sririrak, T., Phongpaichit, S. and Supawita, T. (2004). Effective medicinal plants against enterohaemorrhagic *Escherichia coli* O157:H7. *Journal of Ethnopharmacology*, 94, 49-54.
- Wang, H. X. and Ng, T. B. (1999). Isolation of a new ribonuclease from fresh fruiting bodies of the straw mushroom. *Biochemical and Biophysical Research Communications*, 264, 714-718.

- Wang, H. X. and Ng, T. B. (2000a). Flammulin, a novel ribosome-inactivating-protein from fruiting bodies of the winter mushroom *Flammulina velutipes*. *Biochemistry and Cellular Biology*, 78, 1-4.
- Wang, H. X. and Ng, T. B. (2000b). Isolation of a novel ubiquitin-like protein from *Pleurotus ostreatus* mushroom with anti-human immunodeficiency virus, translation-inhibitory, and ribonuclease activities. *Biochemical and Biophysical Research Communications*, 276, 587-593.
- Wang, H. X. and Ng, T. B. (2000c). Ginkbilobin, a novel antifungal protein from *Ginkgo biloba* seeds with sequence similarity to embryo-abundant protein. *Biochemical and Biophysical Research Communications*, 279, 407-411.
- Wang, H. X. and Ng, T. B. (2001a). Isolation and characterization of velutin, a novel low-molecular-weight ribosome-inactivating protein from white mushroom (*Flammulina velutipes*) fruiting bodies. *Life Sciences*, 68, 2151-2158.
- Wang, H. X. and Ng, T. B. (2001b). Isolation of a novel deoxyribonuclease with antifungal activity from *Asparagus officinalis* seeds. *Biochemical and Biophysical Research Communications*, 289, 120-124.
- Wang, H. X. and Ng, T. B. (2001c). Isolation of a novel deoxyribonuclease with antifungal activity from *Asparagus Officinalis* seeds. *Biochemical and Biophysical Research Communications*, 289, 120-124.
- Wang, H. X. and Ng, T. B. (2001d). Isolation of pleuteregine, a novel ribosome- inactivating protein from fresh sclerotia of the edible mushroom *Pleurotus tuber- regium*. *Biochemical and Biophysical Research Communications*, 288, 718-721.
- Wang, H. X. and Ng, T. B. (2001e). Pleureryn, a novel protease from fresh fruiting bodies of the edible mushroom *Pleurotus eryngii*. *Biochemical and Biophysical Research Communications*, 289, 750-755.
- Wang, H. X. and Ng, T. B. (2002). Isolation of cicadin, a novel and potent antifungal peptide from dried juvenile cicadas. *Peptides*, 23, 7-11.
- Wang, H. X. and Ng, T. B. (2003). Isolation of ribonuclease from fruiting bodies of the wild mushroom *Termitomyces globules*. *Peptides*, 24, 973-977.
- Wang, H. X. and Ng, T. B. (2004a). A new ribonuclease from the black oyster mushroom *Pleurotus ostreatus*. *Peptides*, 25, 685-687.
- Wang, H. X. and Ng, T. B. (2004b). A novel laccase with fair thermostability from the edible wild mushroom (*Albatrella dispansus*). *Biochemical and Biophysical Research Communications*, 319, 381-385.
- Wang, H. X. and Ng, T. B. (2004c). Isolation of a new ribonuclease from fruiting bodies of the silver plate mushroom *Clitocybe maxima*. *Pepides*, 25, 935-939.

- Wang, H. X. and Ng, T. B. (2004d). Purification of a low-molecular-mass laccase with HIV-1 reverse transcriptase inhibitory activity from the mushroom *Tricholoma giganteum*. *Biochemical and Biophysical Research Communications*, 315, 450-454.
- Wang, H. X. and Ng, T. B. (2005). An antifungal peptide from the coconut. *Peptides*, 26, 2392-2396.
- Wang, H. X. and Ng, T. B. (2006a). A laccase from the medicinal mushroom *Ganoderma lucidum*, *Applied Microbiology and Biotechnology*, 72(3), 508-513.
- Wang, H. X. and Ng, T. B. (2006b). Ganodermin, an antifungal protein from fruiting bodies of the medicinal mushroom *Ganoderma lucidum*. *Peptide*, 27, 27-30.
- Wang, H. X., Ng, T. B. and Liu, Q. (2004). Alveolarin, antifungal polypeptide from the wild mushroom *Polyporus alveolaris*. *Peptides*, 25, 693-696.
- Wang, H. X., Ng, T. B. and Ooi, V. E. C. (1998). A ribonuclease from sclerotia of the edible mushroom *Pleurotus tuber-regium*. *Biochemical and Biophysical Research Communications*, 250, 544-546.
- Wang, H. X., Ng, T. B. and Ooi, V. E. C. (1999). Studies on purification of a lectin from fruiting bodies of the edible shiitake mushroom *Lentinus edodes*. *The International Journal of Biochemistry and Cell Biology*, 31, 595-599.
- Wang, H. X., Ng, T. B. and Ooi, V. E. C. (2000). A protein inhibitory activity on cell free translation from cultured mycelia of the edible mushroom *Tricholoma lobayense*. *Comparative biochemistry and Physiology Part B*, 125, 247-253.
- Wang, H. X., Ngai, H. K. and Ng, T. B. (2003). A ubiquitin-like peptide with ribonuclease activity against various polyhomoribonucleotides from the yellow mushroom *Cantharellus cibarius*. *Peptides*, 24, 509-513.
- Wang, J., Wang, H. and Ng, T. B. (2007). A peptide with HIV reverse transcriptase inhibitory activity from the medicinal mushroom *Russula paludosa*. *Peptides*, 28, 560-565.
- Wasser, S. P. (2005). Reishi or ling Zhi (*Ganoderma lucidum*). *Encyclopaedia of Dietary Supplements*, 603-621.
- Wasser, S. P. and Weis, A. L. (1999). Therapeutic effects of substances occurring in higher basidiomycetes mushrooms: A modern perspective. *Critical Reviews in Immunology*, 19, 65-96.
- Wasser, S., Nevo, E., Sokolov, D., Reshetnikov, S. and Timor-Tismenetsky, H. (2000). Dietary supplements from medicinal mushrooms: Diversity of types and variety of regulations. *International Journal of Medicinal Mushroom*, 2, 1-20.

- Wikipedia (2011). *Schizosaccharomyces pombe*. Retrieved 5 January 2011, from http://en.wikipedia.org/wiki/Schizosaccharomyces_pombe
- Wilbur, W. J. and Lipman, D. J. (1983). Rapid similarity searches of nucleic acid and protein data banks, *Proceeding of the National Academy of Sciences of the United States of America*, 80(3), 726-730.
- Wilcox, S. (2004). The new antimicrobial: Cationic peptides. *Biotechnology Journal*, 2, 88-91.
- Wilhelm, B. T., Marguerat, S., Watt, S., Schubert, F., Wood, V., Goodhead, I. *et al.* (2008). Dynamic repertoire of a eukaryotic transcriptome surveyed at single-nucleotide resolution. *Nature*, 453, 1239-1243.
- Wong, J. H., Ng, T. B., Wang, H., Wing Sze, S. C., Zhang, Q. L. and Lu, X. (2010). Cordymin, an antifungal peptide from the medicinal fungus *Cordyceps militaris*. *Phytomedicine*, 18(5), 387-392.
- World Health Organization (2008). The burden of health care-associated infection worldwide. Retrieved 5 January 2011, from http://www.who.int/gpsc/country_work/summary_20100430_en.pdf
- Xiong, Y. Q., Bayer, A. S., and Yeaman, M. R. (2002). Inhibition of intracellular macromolecular synthesis in *Staphylococcus aureus* by thrombin-induced platelet microbicidal proteins. *Journal of Infectious Diseases*, 186, 668–677.
- Yamac, M. and Bilgiri, F. (2006). Antimicrobial activities of fruit bodies and/or mycelia cultures of some mushroom isolates, *Pharmaceutical Biology*, 44, 660-667.
- Yao, Q. Z., Yu, M. M., Ooi, L. S., Ng, T. B., Chang, S. T., Sun, S. S., et al. (1998). Isolation and characterization of a ribosome inactivating protein from fruiting bodies of the edible mushroom (*Volvariella volvacea*). *Journal of Agricultural and Food Chemistry*, 46, 788-792.
- Ye, X. Y. and Ng, T. B. (2002). A novel and potent ribonuclease from fruiting bodies of the mushroom *Pleurotus pulmonarius*. *Biochemical and Biophysical Research Communications*, 293, 857-861.
- Yeaman, M. R. and Yount, N. Y. (2003). Mechanisms of antimicrobial peptide action and resistance. *Pharmacological reviews*, 55, 27-55.
- Yeh, Z. Y., Chang, C. Y. and Lee-Chen, G. J. (1995). Genetic diversity of two intersterility groups of *Ganoderma australe* in Taiwan. *Biological Bulletin of National Taiwan Normal University*, 30, 117-124.
- Ying, J. Z., Mou, X. L., Ma, Q. H., Zong, Y. C. and Wen, H. A. (1987). Icons of medicinal fungi from china (translation Xu Y.H.), in *Illustrations of Chinese Medicinal Fungi*.

(J. Z. Ying, X. L. Mou, Y. C. Zong, and H. A. Wen, Eds.), Beijing, Science Press. (pp 579-585).

Zasloff, M. (2002). Antimicrobial peptides of multicellular organisms. *Nature*, 415, 389 -395.

Zakaria, L., Ali, N. S., Salleh, B. and Zakaria, M. (2009). Molecular analysis of *Ganoderma* species from different hosts in peninsula Malaysia. *Journal of Biological Sciences*, 9(1), 12-20.

Zhang, W. and Chait, B. T. (2000). Profound : An expert system for protein identification using mass spectrometric peptide mapping information. *Analytical Chemistry*, 72, 2482-2489.

Zheng, H., Mouqing, Ye., Liqiu, X., Wenjuan, T., Liang, L. and Goulin, Z. (2006). Purification and characterization of an antibacterial protein from the cultured mycelia of *Cordyceps sinensis*. *Wuhan University Journal of Natural Sciences*, 11(3), 709-714.

Zheng, S., Li, C., Ng, T. B. and Wang, H. X. (2007). A lectin with mitogenic activity from the edible wild mushroom *Boletus edulis*, *Process Biochemistry*, 42(12), 1620-1624.

Zheng, S., Liu, Q., Zhang, G., Wang, H. and Ng, T. B. (2010). Purification and characterization of an antibacterial protein from the dried fruiting bodies of the wild mushroom *Clitocybe sinopica*. *Acta Biochimica Polonica*, 57(1), 43-48.

Zhou, C. G., Sun, H., Tong, X. and Qi, Y. P. (2003). An antitumour lectin from the edible mushroom *Agrocybe aegerita*. *Biochemical Journal*, 374, 321–327.

Zoberi, M. H. (1972). *Tropical macrofungus*. London: Macmillan Press. (pp.158).