

6. REFERENCES

- Allagheny, N., Obanu, Z. A., Campbell-Platt, G., & Owens, J. D. (1996). Control of ammonia formation during *Bacillus subtilis* fermentation of legumes. *International journal of food microbiology*, 29(2-3), 321-333. [https://doi.org/10.1016/0168-1605\(95\)00069-0](https://doi.org/10.1016/0168-1605(95)00069-0)
- Antova, G. A., Stoilova, T. D., & Ivanova, M. M. (2014). Proximate and lipid composition of cowpea (*Vigna unguiculata* L.) cultivated in Bulgaria. *Journal of Food Composition and Analysis*, 33(2), 146-152. <https://doi.org/10.1016/j.jfca.2013.12.005>
- Brand-Williams, W., Cuvelier, M. E., & Berset, C. L. W. T. (1995). Use of a free radical method to evaluate antioxidant activity. *LWT-Food science and Technology*, 28(1), 25-30. [https://doi.org/10.1016/S0023-6438\(95\)80008-5](https://doi.org/10.1016/S0023-6438(95)80008-5)
- Chettri, R., Bhutia, M. O., & Tamang, J. P. (2016). Poly- γ -glutamic acid (PGA)-producing *Bacillus* species isolated from Kinema, Indian fermented soybean food. *Frontiers in microbiology*, 7, 971. <https://doi.org/10.3389/fmicb.2016.00971>
- Cho, K. M., Lee, J. H., Yun, H. D., Ahn, B. Y., Kim, H., & Seo, W. T. (2011). Changes of phytochemical constituents (isoflavones, flavanols, and phenolic acids) during cheonggukjang soybeans fermentation using potential probiotics *Bacillus subtilis* CS90. *Journal of Food Composition and Analysis*, 24(3), 402-410. <https://doi.org/10.1016/j.jfca.2010.12.015>
- Dueñas, M., Fernández, D., Hernández, T., Estrella, I., & Muñoz, R. (2005). Bioactive phenolic compounds of cowpea (*Vigna sinensis* L.). Modifications by fermentation with natural microflora and with *Lactobacillus plantarum* ATCC 14917. *Journal of the Science of Food and Agriculture*, 85(2), 297-304. <https://doi.org/10.1002/jsfa.1924>
- Halloon, J. M. (1982). Localization and changes in catechin and tannins during development and ripening of cottonseed. *New Phytologist*, 90(4), 651-657. <https://doi.org/10.1111/j.1469-8137.1982.tb03274.x>
- Henshaw, F. O. (2008). Varietal differences in physical characteristics and proximate composition of cowpea (*Vigna unguiculata*). *World Journal of Agricultural Sciences*, 4(3), 302-306. <https://pdfs.semanticscholar.org/dcc9/6a75eb4ee527a1099641cca8dce35a905057.pdf>

- Hitosugi, M., Hamada, K., & Misaka, K. (2015). Effects of *Bacillus subtilis* var. *natto* products on symptoms caused by blood flow disturbance in female patients with lifestyle diseases. *International journal of general medicine*, 8, 41. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4310345/>
- Hosoi, T., Ametani, A., Kiuchi, K., & Kaminogawa, S. (2000). Improved growth and viability of lactobacilli in the presence of *Bacillus subtilis* (*natto*), catalase, or subtilisin. *Canadian journal of microbiology*, 46(10), 892-897. <https://doi.org/10.1139/w00-070>
- Hu, Y., Ge, C., Yuan, W., Zhu, R., Zhang, W., Du, L., & Xue, J. (2010). Characterization of fermented black soybean *natto* inoculated with *Bacillus natto* during fermentation. *Journal of the Science of Food and Agriculture*, 90(7), 1194-1202. <https://doi.org/10.1002/jsfa.3947>
- Hur, S. J., Lee, S. Y., Kim, Y. C., Choi, I., & Kim, G. B. (2014). Effect of fermentation on the antioxidant activity in plant-based foods. *Food chemistry*, 160, 346-356. <https://doi.org/10.1016/j.foodchem.2014.03.112>
- Jayathilake, C., Visvanathan, R., Deen, A., Bangamuwage, R., Jayawardana, B. C., Nammi, S., & Liyanage, R. (2018). Cowpea: an overview on its nutritional facts and health benefits. *Journal of the Science of Food and Agriculture*, 98(13), 4793-4806. <https://doi.org/10.1002/jsfa.9074>
- Jhan, J. K., Chang, W. F., Wang, P. M., Chou, S. T., and Chung, Y. C. (2015). Production of fermented red beans with multiple bioactivities using co-cultures of *Bacillus subtilis* and *Lactobacillus delbrueckii* subsp. *bulgaricus*. *LWT-food science and technology*, 63(2), 1281-1287. <https://doi.org/10.1016/j.lwt.2015.03.107>
- Juan, M. Y., and Chou, C. C. (2010). Enhancement of antioxidant activity, total phenolic and flavonoid content of black soybeans by solid state fermentation with *Bacillus subtilis* BCRC 14715. *Food microbiology*, 27(5), 586-591. <https://www.sciencedirect.com/science/article/pii/S0740002009002603>
- Kada, S., Yabusaki, M., Kaga, T., Ashida, H., & Yoshida, K. I. (2008). Identification of two major ammonia-releasing reactions involved in secondary *natto* fermentation. *Bioscience, biotechnology, and biochemistry*, 0806060936-0806060936. https://www.jstage.jst.go.jp/article/bbb/advpub/0/advpub_80129/_article/-char/ja/
- Kayitesi, E., Duodu, K. G., Minnaar, A., & de Kock, H. L. (2013). Effect of micronisation of pre-conditioned cowpeas on cooking time and sensory

- properties of cooked cowpeas. *Journal of the Science of Food and Agriculture*, 93(4), 838-845.
<http://citeserx.ist.psu.edu/viewdoc/download?doi=10.1.1.1022.51&rep=rep1&type=pdf>
- Leejeerajumnean, A., Ames, J. M., & Owens, J. D. (2000). Effect of ammonia on the growth of *Bacillus* species and some other bacteria. *Letters in applied microbiology*, 30(5), 385-389. <https://doi.org/10.1046/j.1472-765x.2000.00734.x>
- Ma, Y. Y., Liu, Q. B., Yang, H. W., Tang, Y. Y., & Yang, J. G. (2015). Research on the improvement of natto-production process. *Advance Journal of Food Science and Technology*, 7(9), 704-708.
<https://maxwellsci.com/msproof.php?doi=ajfst.7.1631>
- Milner, M., & Makise, K. (2002). Natto and its active ingredient nattokinase: A potent and safe thrombolytic agent. *Alternative & complementary therapies*, 8(3), 157-164. <https://www.liebertpub.com/doi/10.1089/107628002760091001>
- Muramatsu, K., Katsumata, R., Watanabe, S., Tanaka, T., and Kiuchi, K. (2001). Development of low-flavor natto manufactured with leucine-requiring mutants of elastase-producing natto *Bacillus*. *Journal of the Japanese Society for Food Science and Technology (Japan)*. <http://agris.fao.org/agris-search/search.do?recordID=JP2001004652>
- Mwangwela, A. M., Waniska, R. D., & Minnaar, A. (2007). Effect of micronisation temperature (130 and 170° C) on functional properties of cowpea flour. *Food chemistry*, 104(2), 650-657. <https://doi.org/10.1016/j.foodchem.2006.12.038>
- Naruse, K., and Naruse, W. (1978). U.S. Patent No. 4,110,477. Washington, DC: U.S. Patent and Trademark Office. <https://patents.google.com/patent/US4110477A/en>
- Oliveira, M. D. S., Cipolatti, E. P., Furlong, E. B., & Soares, L. D. S. (2012). Phenolic compounds and antioxidant activity in fermented rice (*Oryza sativa*) bran. *Food Science and Technology*, 32(3), 531-537.
http://www.scielo.br/pdf/cta/v32n3/aop_cta_5500.pdf
- Parkouda, C., Nielsen, D. S., Azokpota, P., Ivette Irène Ouoba, L., Amoa-Awua, W. K., Thorsen, L., ... & Jakobsen, M. (2009). The microbiology of alkaline-fermentation of indigenous seeds used as food condiments in Africa and Asia. *Critical Reviews in Microbiology*, 35(2), 139-156. <https://www.tandfonline.com/doi/abs/10.1080/10408410902793056>
- Pisol, B., Abdullah, N., Khalil, K. A., & Nuraida, L. (2015). Isolation and identification of lactic acid bacteria from different stages of traditional Malaysian tempeh

- production. *Malaysian Journal of Microbiology*, 11(4), 358-364. <http://wprim.whocc.org.cn/admin/article/articleDetail?WPRIMID=626783&articleId=626783>
- Ratnaningsih, N., Harmayani, E., and Marsono, Y. (2016). Composition, microstructure, and physicochemical properties of starches from Indonesian cowpea (*Vigna unguiculata*) varieties. *International Food Research Journal*, 23(5). [https://www.researchgate.net/publication/308959677 Composition microstructure and physicochemical properties of starches from Indonesian cowpea Vigna unguiculata varieties](https://www.researchgate.net/publication/308959677_Composition_microstructure_and_physicochemical_properties_of_starches_from_Indonesian_cowpea_Vigna_unguiculata_varieties)
- Ratnaningsih, N., Nugraheni, M., and Rahmawati, F. (2009). Pengaruh Jenis Kacang Tolo, Proses Pembuatan Dan Jenis Inokulum Terhadap Perubahan Zat-Zat Gizi Pada Fermentasi Tempe Kacang Tolo. *J Penelitian Saintek*, 14, 97-128. <https://journal.uny.ac.id/index.php/saintek/article/download/696/564>
- Sayekti, R. S., and Djoko Prajitno, T. (2013). Karakterisasi Delapan Aksesi Kacang Tunggak (*Vigna unguiculata* {L.} Walp) Asal Daerah Istimewa Yogyakarta. *Vegetalika*, 1(1), 1-10. <https://doi.org/10.22146/veg.1379>
- Sefa-Dedeh, S., Stanley, D. W., & Voisey, P. W. (1979). Effect of storage time and conditions on the hard-to-cook defect in cowpea (*Vigna unguiculata*). *Journal of Food Science*, 44(3), 790-795. <https://doi.org/10.1111/j.1365-2621.1979.tb08503.x>
- Shrestha, A. K., Dahal, N. R., and Ndungutse, V. (2010). Bacillus fermentation of soybean: A review. *Journal of Food Science and Technology Nepal*, 6, 1-9. <https://doi.org/10.3126/jfstn.v6i0.8252>
- Shurtleff, W., and Aoyagi, A. (2012). History of Natto and Its Relatives (1405-2012). Soyinfo Center. <http://www.soyinfocenter.com/pdf/151/Natt.pdf>
- Shockley, K. K., & Shockley, C. (2013). *Miso, Tempeh, Natto & Other Tasty Ferments: A Step-by-Step Guide to Fermenting Grains and Beans*. Storey Publishing, LLC. [https://ia800703.us.archive.org/23/items/MbNIn13\(mb%20n%20in%2013.pdf](https://ia800703.us.archive.org/23/items/MbNIn13(mb%20n%20in%2013.pdf)
- Siddhuraju, P., & Becker, K. (2007). The antioxidant and free radical scavenging activities of processed cowpea (*Vigna unguiculata* (L.) Walp.) seed extracts. *Food Chemistry*, 101(1), 10-19. <https://doi.org/10.1016/j.foodchem.2006.01.004>
- Steinkraus, K. (2004). *Industrialization of indigenous fermented foods, revised and expanded*. CRC Press.

- https://books.google.co.id/books?id=WfjPq9dfTuMC&pg=PA230&lpg=PA230&q=ph+of+natto&source=bl&ots=ID4P_z2R3E&sig=ACfU3U0sL1hih7U3BVDqo-f62kFCICGgUA&hl=en&sa=X&ved=2ahUKEwjqua0l_iAhVKK48KHduIBesQ6AEwFnoECAkQAQ#v=onepage&q&f=true
- Sulistyo, J., Taya, N., Funane, K., & Kiuchi, K. (1988). Production of natto starter. *Nippon Shokuhin Kogyo Gakkaishi*, 35(4), 278-283. https://doi.org/10.3136/nskkk1962.35.4_278
- Sutton, S. (2011). Measurement of microbial cells by optical density. *Journal of Validation technology*, 17(1), 46-49. <https://pdfs.semanticscholar.org/dde4/d214f9f6dc476c06d400f32354a54deef1c8.pdf>
- Tabasum, S. H., Khare, S. W., & Jain, K. I. (2016). Spectrophotometric quantification of total phenolic, flavonoid and alkaloid contents of *Abrus precatorius* L. seeds. *Asian J Pharm Clin Res*, 9(2), 371-374. https://www.researchgate.net/profile/Shazia_Tabasum3/publication/311224790_Spectrophotometric_quantification_of_total_phenolic_flavonoid_and_alkaloid_contents_of_abrus_precatorius_L_Seeds/links/5aae9424a6fdcc1bc0bc716c/Spectrophotometric-quantification-of-total-phenolic-flavonoid-and-alkaloid-contents-of-abrus-precatorius-L-Seeds.pdf
- Taghinezhad, E., Khoshtaghaza, M. H., Minaei, S., & Latifi, A. (2015). Effect of soaking temperature and steaming time on the quality of parboiled Iranian paddy rice. *International journal of food engineering*, 11(4), 547-556. <https://doi.org/10.1515/ijfe-2014-0296>
- Tamanna, N., & Mahmood, N. (2015). Food processing and maillard reaction products: effect on human health and nutrition. *International journal of food science*, 2015. <http://dx.doi.org/10.1155/2015/526762>
- Tortora, G. J., Funke, B. R., & Case, C. L. (2013). *Microbiology: An Introduction*. 13th. *Yorkshire*: Pearson. [https://ia800703.us.archive.org/23/items/MbNIn13\(mb%20n%20in%202013\).pdf](https://ia800703.us.archive.org/23/items/MbNIn13(mb%20n%20in%202013).pdf)
- Ul-Haq, M., Ahmad, S., Amarowicz, R., and De Feo, V. (2013). Antioxidant activity of the extracts of some cowpea (*Vigna unguiculata* (L) Walp.) cultivars commonly consumed in Pakistan. *Molecules*, 18(2), 2005-2017. <https://doi.org/10.3390/molecules18022005>

- Wang, J., & Fung, D. Y. (1996). Alkaline-fermented foods: a review with emphasis on pidan fermentation. *Critical Reviews in Microbiology*, 22(2), 101-138. <https://doi.org/10.3109/10408419609106457>
- Wei, Q., Wolf-Hall, C., & Chang, K. C. (2001). Natto characteristics as affected by steaming time, Bacillus strain, and fermentation time. *Journal of food science*, 66(1), 167-173. <https://doi.org/10.1111/j.1365-2621.2001.tb15601.x>
- Weng, T. M., & Chen, M. T. (2010). Changes of Protein in Natto (a fermented soybean food) Affected by Fermenting Time. *Food science and technology research*, 16(6), 537-542. <https://doi.org/10.3136/fstr.16.537>
- Wonghirundecha, S., Benjakul, S., & Sumpavapol, P. (2014). Total phenolic content, antioxidant and antimicrobial activities of stink bean (*Parkia speciosa* Hassk.) pod extracts. *Songklanakarin J Sci Technol*, 36(3), 300-8. <http://rdo.psu.ac.th/sjstweb/Ar-Press/57-Apr/27.pdf>
- Ying, W., Zhu, R., Lu, W., & Gong, L. (2009). A new strategy to apply *Bacillus subtilis* MA139 for the production of solid-state fermentation feed. *Letters in applied microbiology*, 49(2), 229-234. <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1472-765X.2009.02647.x>
- Zhang, S., Shi, Y., Zhang, S., Shang, W., Gao, X., & Wang, H. (2014). Whole soybean as probiotic lactic acid bacteria carrier food in solid-state fermentation. *Food Control*, 41, 1-6. <https://doi.org/10.1016/j.foodcont.2013.12.026>