

DAFTAR PUSTAKA

- Apriyani, T.W. 2010. Peningkatan Aktivitas Antioksidan, Profil Senyawa Fenolik, dan Sifat Sensoris Ekstrak Teh Hitam Klon Unggulan PT. Pagilaran dengan Perlakuan Enzim Tannase. Tesis. Universitas Gadjah Mada
- Artanti, N., dan M, Hanafi. 2002. Aktifitas Antioksidan Sejumlah Teh yang ada Dipasaran. Poseding Seminar Tentang Penelitian Kimia Era Biologi dan Super Informasi. 17 September 2002.
- Arunangshu Ghosh, Pradip Tamuly , Nabarun Bhattacharyya Bipan Tudu Nagen Gogoi Rajib Bandyopadhyay. 2012. Estimation of Theaflavin Content in Black Tea Using Electronic Tongue. Journal of Food Engineering 110 (2012) 71–79.
- Astika, W., D. Muchtar, dan Sutrisno. 1996. Klon-klon Teh Baru yang Telah Dilepas oleh Balai Penelitian Teh dan Kina, Gambung. Warta Teh dan Kina. 7: 6-15.
- Badan Pusat Statistik. 2017. Statistik Teh di Indonesia 2017. www.bps.go.id. Diakses pada tanggal 18 Desember 2019 pukul 20.54 WIB.
- Benzie, I.F.F., and Devaki, M. 2018 The ferric reducing/antioxidant power (FRAP) assay for non-enzymatic antioxidant capacity: Concepts, procedures, limitations and applications In Measurement of Antioxidant Activity and Capacity: Recent Trends and Applications, 77–106. John Wiley & Sons: New Jersey.
- Borse, B., and Rao, L.J.. 2012. Novel Bio-Chemical Profiling of Indian Black Teas with Reference to Quality Parameters. Journal of Microbial & Biochemical Technology S14 (14): 1–16.

- Cabrera, C., Gimenez, R. and Lopez, M.C. 2003. Determination of Tea Components with Antioxidant Activity. *J. Agric. Food Chem.* 51,4427-4435.
- Celik, A., Dincer, A., dan Aydemir, T. (2016). Characterization of β -glukosidase immobilized on chitosan-multiwalled carbon nanotubes (MWCNTS) and their application on tea extracts for aroma enhancement. *International Journal of Biological Macromolecules* 89: 406-414.
- Chen Z, Zhu QY, Tsang D, Huang Y. Degradation of green tea catechins in tea drinks. *J Agric Food Chem.* 2001 Jan;49(1):477-82. doi: 10.1021/jf000877h. PMID: 11170614.
- Cleverdon, Riley; Elhalaby, Yasmeen; McAlpine, Michael; Gittings, William; Ward, Wendy (2018). *Total Polyphenol Content and Antioxidant Capacity of Tea Bags: Comparison of Black, Green, Red Rooibos, Chamomile and Peppermint over Different Steep Times. Beverages*, 4(1), 15
- Coetzee, G., Van Zyl, W. H., Joubert, E., dan Viljoen 2001. -Bloom, M. 2005. Evaluation of commercial enzymes for the bioprocessing of rooibos tea. Stellenbosch University.
- Das, Shrilekha; Samanta, Tanmoy; Datta, A. K. (2019). *Analysis and modeling of major polyphenols during oxidation in production of black tea. Journal of Food Processing and Preservation*, 43(12)
- Deb, S., dan Pou, K.R>J. 2016. A review of withering in the processing of black tea. *Journal of Biosystem Engineering.* 41(4): 365-372 (2016.12).
- De Garmo, E.P., W.G. Sullivan, dan C.R Candra. 1984. *Engineering Economy*. 7th edition Mc Millan Publ. Co. New York.

- Dubey, K.K., Janve, M., Ray, A., dan Singhal, R.S. 2020. Ready-to-drink Tea In Trends in Non-alcoholic Beverages, page 101–140. Woodhead Publishing: Cambridge
- Engelhardt, U.H. 2013. *Chemistry of Tea.Germany*. Institutfu'r Lebensmittelchemie, Braunschweig.
- Feng, Q., Y. Torii, K. Uchida, Y. Nakamura, Y. Hara, dan T. Osawa. 2002. Black Tea Polyphenols, Theaflavins, Prevent Cellular DNA Damage by Inhibiting Oxidative Stress and Suppressing Cytochrome P450 1A1 in Cell Cultures. Journal Agricultural and Food Chemistry 50 : 213-220.
- Han, Z. X., Rana, M. M., Liu, G. F., Gao, M. J., Li, D. X., Wu, F. G., dan Wei, S. 2016. Green Tea Flavour Determinants And Their Changes Over Manufacturing Processes. Food Chemistry, 212.
- Ho, C.-T., Zheng, X., dan Li, S. 2015. Tea aroma formation. Food Science and Human Wellness, 4(1), 9–27.
- Horita, H. 1987. Off-flavor component of green tea during preservation. Japan Agricultural Research Quarterly. Vol. 21 No. 23.
- Ichsan, O.A.N. 2019. Seleksi Klon Teh Unggul PT Pagilaran Sebagai Bahan Baku Teh Hitam Kualitas Premium. Universitas Gadjah Mada. 33–54.
- Iswari, K dan Srimaryati. 2016. Pengaruh Tingkat Ketuaan Daun dan Lama Fermentasi terhadap Mutu Teh Daun Gambir. Balai Pengkajian Teknologi Pertanian Sumatra Barat.
- Jobstl, E., Fairclough, J.P.A., Davies, A.P., dan Williamson, M.P. 2005. Creaming in black tea. Journal of Agricultural and Food Chemistry 53 (20): 7997–8002.

- Kang, S., Yan, H., Zhu, Y., Liu, X., Lv, H. P., Zhang, dan Y. Lin, Z. 2019. Identification and Quantification of Key Odorants in The World's Four Most Famous Black Teas. *Food Research International*, 121(January), 73–83.
- Kaur, L. (2014). Antioxidant Quality of Tea (*Camellia sinensis*) as Affected by Environmental Factors. Processing and Impact on Antioxidants in Beverages : New Zealand.
- Khan, N. dan Mukhtar, H. 2007. Tea Polyphenols for Health Promotion. *Life Science* 81 (7) : 519-533
- Kim, Y.M., Goodner, K. L., Park, J. D., Choi, J., dan Talcott, S. T. 2011. Changes in antioxidant phytochemicals and volatile composition of *Camellia sinensis* by oxidation during tea fermentation. *Journal of Food Chemistry* 129 (2011) 1331–1342
- Kobayashi, A., Kubota, K., Joki, Y., Wada, E. and Wakabayashi, W., 1994, Z-3-Hexenyl- β -D-glucopyranosides in Fresh Tea Leaves as a Precursor of Green Odor. *Biosci Biotechnol Biochem*, 58.
- Krisyanto, P., Indradewa, D., dan Sriyanto, W. 2012. Potensi hasil dan toleransi kekeringan seri klon teh (*Camellia sinensis* (L.) Kuntze) PGL di Kebun Produksi Pagilaran Bagian Andongsili. *Vegetalika* 1 (1): 160–172.
- Lerch K. 1983. *Neurospora tyrosinase*: structural, spectroscopic and catalytic properties. *Mol Cell Biochem*. 1983;52(2):125-38. PMID: 6308414.
- Li, D., Cao, P., Wang, M. 2020. Effect of Beta-glucosidase on the Aroma of Milk Tea Beverage. *IOP Conference Series: Earth and Environmental Science*. 512 012075Li, YY,

- Li, Y., Shibahara, A., Matsuo, Y., Tanaka, T., dan Kuono, I. 2010. Reaction of The Black Tea Pigment Theaflavin during Enzymatic Oxidation of Tea Catechins. *Journal of Natural Product* 73(1):33-39.
- Li, J., Xiao, Q., Huang, Y., Ni, H., Wua, C., and Xiao, A. 2017 .Tannase application in secondary enzymatic processing of inferior Tieguanyin oolong tea. *Electronic Journal of Biotechnology* 28, 87–94
- Liang, Y., Lu, J., Zhang, L., Wu, S., dan Wu, Y. 2005. Estimation of tea quality by infusion colour difference analysis. *Journal of the Science of Food and Agriculture* 85 (2): 286–292.
- Liang, Y., Lu, J., Zhang, L., Wu, S., dan Wu, Y. 2012. Estimation of black tea quality by analysis of chemical compotition and colour difference of tea infusions. *Journal of Food Chemistry* 80 (2003) 283-290.
- Lin, X., Chen, Z., Zhang, Y., Luo, W., Tang, H., Deng, B., Deng, J., dan Li, B. 2015. Comparative characterisation of green tea and black tea cream: Physicochemical and phytochemical nature. *Food Chemistry* 173: 432–440.
- Martono, Y dan Martono S. 2012. Analisis Kromatografi Cair Kinerja Tinggi untuk Penetapan Kadar Asam Galat, Kafein dan Epigallocatekin Galat pada Beberapa Produk Teh Celup. *Agritech* 32 (4):362-369.
- Matsuo, Y., Yamada, Y., Tanaka, T., & Kouno, I. 2008. Enzymatic oxidation of gallocatechin and epigallocatechin: Effects of C-ring configuration on the reaction products. *Phytochemistry*, 69(18), 3054–3061.
- Muigai, F., Wanyoko, J. K., Mahungu, S. M., dan Shitandi, A. A. (2009). Catechins Depletion Patterns in Relation to Theaflavin and Thearubigins Formation.

Food Chemistry, 115, 8–14.

- Murugesan, P., Venkateswaran, G., dan Sathish, G. 2020. Enhancing the quality of naturally oxidized tea with ascorbic acid. *International Journal of Advanced Engineering Research and Science* 7 (4): 403–409.
- Narai-Kanayama, A.N., Kawashima, A. Uchida, Y. Kawamura, M., dan Nakayama, T. 2017. Specificity of Tyronase-catalyzed Synthesis of Theaflavin. *Journal of Molecular Catalysis B : Enzymatic*
- Narai-Kanayama, A. N., Uekusa, Y., Kiuchi, F., dan Nakayama, T. 2018. Efficient synthesis of theaflavin-3-gallate by a tyrosinase-catalyzed reaction with (-)-epicatechin and (-)- epigallocatechin gallate in a 1-octanol/buffer biphasic system. *Journal of Agriculture and Food Chemistry*.
- Nasution, M.Z. dan W. Tjiptadi. 1975. Pengolahan Teh. Departemen Teknologi Hasil Pertanian, FATEMETA, IPB, Bogor.
- Ngure, F. M., Wanyoko, J. K., Mahungu, S. M., dan Shitandi, A. A. 2009. Catechins Depletion Patterns in Relation to Theaflavin and Thearubigins Formation. *Food Chemistry* 115(1):8–14.
- Nuryana, I., Ratnakomala, S., Fahrurrozi, F., Juanssilfero, A.B., Andriani, A., Putra, F.J.N., Rezamela, E., Wulansari, R., Atmaja, M.I.P., dan Lisdiyanti, P. 2020. Catechin Contents, Antioxidant and Antibacterial Activities of Different Types of Indonesian Tea (*Camellia sinensis*). *Annales Bogorienses* Vol. 24, No. 2.
- Ouyang, X., Yuan, G., Ren, J., Wang, L., Wang, M., Li, Y., Zhang, B., dan Zhu, B. 2017. Aromatic compounds and organoleptic features of fermented wolfberry

- wine: Effects of maceration time, *International Journal of Food Properties*,
20:10, 2234-2248, DOI: 10.1080/10942912.2016.1233435
- Pou, K. R. Jolvis. (2016) . Fermentation: The Key Step in the Processing of Black Tea.
Journal of Biosystems Engineering 41(2) : 85-92.
- Raghuwanshi, S., Misra, S., dan Saxena, R.K. 2012. Enzymatic Treatment of Black Tea
(CTC and Kangra Orthodox) Using *Penicillium charlesii* Tannase to Improve
the Quality of Tea. *Journal of Food Processing and Preservation* ISSN 1745-
4549
- Rietveld A and Wiseman S. 2003. Antioxidant effects of tea: Evidence from Human
Clinical Trials. *J Nutr* 33:3275–3284.
- Rodrigues, J dan Almeida, P. 2009. E-2-Nonenal and β -Damascenone in Beer. Elsevier
: Beer in Health and Disease Prevention 395-402
- Rohdiana, Dadan dan Tantan Widiantra. 2004. Aktifitas Antioksidan Beberapa Klon
Teh Unggulan. Prosiding Seminar Nasional dan Kongres Perhimpunan Ahli
Teknologi Pangan Indonesia (PATPI). 17-18 Desember. Jakarta.
- Sanyal, S., 2011. Tea Manufacturing Manual. Tea Research Association, Tocklai
Experimental Station, Jorhat.
- Sang, S. 2016. Tea : Chemistry and Processing. *Encyclopedia of Food and Health* Page
268 – 272.
- Selinheimo, D. Nieidhin, C. Steffensen, J. Nielsen, A. Lomascolo, S. Halaoui, E.
Record, D. O’Beirne, J. Buchert, dan K. Kruus. 2007. Comparison of The
Characteristics of Fungal and Plant Tirosinases, *J. Biotechnol.* 130 (2007).
- Setyamidjaja, D. 2000. Teh, Budidaya dan Pengolahan Pasca Panen. *Kanisius*.

Yogyakarta.

Shahidi, F. dan M. Nacz. 2004. Phenolics in Food and Nutraceuticals. CRC Press
LLC, USA.

Sharma, Neha; Phan, Huong T.; Chikae, Miyuki; Takamura, Yuzuru; Azoâ Oussou,
Auriane F.; Vestergaard, Mun'delanji C. (2020). *Black tea polyphenol
theaflavin as promising antioxidant and potential copper chelator. Journal of
the Science of Food and Agriculture, (), jsfa.10347–. doi:10.1002/jsfa.10347*

Shukla, Y. 2007. Tea and Cancer Chemoprevention : A Comprehensive Riview. *Asian
Pasific Journal of Cancer Preventiom*, Vol. 8, Hal: 155-166.

Siswoputranto, P.S. 1 978. Perkembangan Teh, Kopi, Cokelat Internasional. *Gramedia*.
Jakarta.

Soedradjat, R. Rulan. 2003. Pengolahan Teh Hitam di Indonesia. Makalah BPTK.
Gambung.

Stodt, U.W., Blauth, N., Niemann, S., Stark, J., Pawar, V., Jayaraman, S., Koek, J., dan
Engelhardt, U.H. 2014. Investigation of processes in black tea manufacture
through model fermentation (oxidation) experiments. *Journal of Agricultural
and Food Chemistry* 62 (31): 7854–7861.

Su, E., Xia, T., Gao, L., Dai, Q., dan Zhang, Z. 2010. Immobilization of β -glukosidase
and its Aroma-increasing Effect on Tea Beverage. *Food and Bioproducts
Processing*, 88(2–3), 83–89.

Sudaryat, Y., Kusmiyati, M., Pelangi, C.R., Rustamsyah, A., and Rohdiana, D. 2015.
Aktivitas Antioksidan Seduhan Sepuluh Jenis Mutu Teh Hitam (*Camelia
sinensis* (L.) O. Kuntze) Indonesia. *Jurnal Penelitian Teh dan Kina* 18 (2),95-

100.

Tanaka, T. and Kouno, I. 2003. Oxidation of Tea Catechins: Chemical structures and reaction mechanism. *Food Sci. Technol. Res.* 2003, 9.

Toda, M., Mase, N., Matsuo, T., Tong, H., Yang, Z., Takemoto, H., dan Cui, J. (2016). Characteristic Fluctuations in Glycosidically Bound Volatiles during Tea Processing and Identification of Their Unstable Derivatives. *Journal of Agricultural and Food Chemistry*, 64(5), 1151–1157.

Ullah, M. R. 1986. A rapid procedure for estimating theaflavins and thearubigins of black tea. *Two and a Bud*, 33, 46–48

Varnam, A.H. and J.P. Sutherland. 1994. *Beverages : Technology, Chemistry, dan Microbiology*. Chapman and Hall, London, UK.

Verloop, A. J. W., Grupp, H., Bisschop, dan R. Vincken, J. P. 2016. Altering the Polyphenolic Profile of Green Tea Leaves Using Extract Using Exogenous Enzyme. *Journal of Food Chemistry* 196.

Wan, X.C. 2003. *Tea Biochemistry* (3rd ed.). China Agricultural Press. Beijing.

Wichers, H.J., Gerritsen, Y.A. and Chapelon, C.G.J. 1996. Tyrosinase isoforms from the fruitbodies of *Agaricus bisporus*. *Phytochemistry* 43, 333–337.

Wu, Y., Lv, S., Lian, M., Wang, C., Gao, X, and Qingxiong Meng. 2016. Study of characteristic aroma components of baked Wujia tai green tea by HS-SPME/GC-MS combined with principal component analysis, *CyTA - Journal of Food*, 14:3, 423-432,

Yabuki, C., Yagi, K., dan Nanjo, F. 2017. Highly efficient synthesis of theaflavins by tyrosinase from mushroom and its application to theaflavin related

compounds. *Process Biochemistry* 55: 61–69.

- Yue, C., Yang, P., Qin, D., Cai, H., Wang, Z., Li, C., dan Wu, H. 2020. Identification of volatile components and analysis of aroma characteristics of Jiangxi Congou black tea, *International Journal of Food Properties*, 23:1, 2160-2173.
- Zeng, L., Watanabe, N., dan Yang, Z. 2018. Understanding The Biosyntheses and Stress Response Mechanisms of Aroma Compounds in Tea (*Camellia sinensis*) to Safely and Effectively Improve Tea Troma . *Critical Reviews in Food Science and Nutrition*, 8398, 1–14.
- Zhao, J. and Slaga, T. J. 2004. Processing Method for Manufacturing Black Tea and an Improved Black Tea (Vol. 6602527). United States.
- Zhang, X. F., dan Du, X.B. 2015. Effects of exogenous enzymatic treatment during processing on the sensory quality of summer tieguanyin oolong tea from the Chinese Anxi county. *Food Technol. Biotechnol.*, vol. 53, no. 2, pp. 180–189.