

BAB VI

KESIMPULAN DAN SARAN

6.1. Kesimpulan

1. Tidak ada pengaruh interaksi ($\alpha=5\%$) antara proporsi ekstrak murbei hitam dan susu UHT serta lama penyimpanan pada semua parameter.
- 2.a. Proporsi ekstrak murbei hitam dan susu UHT berpengaruh nyata ($\alpha=5\%$) terhadap kadar antosianin, pH, *redness*, *lightness*, dan *yellowness* yogurt murbei hitam.
- 2.b. Semakin besar proporsi ekstrak murbei hitam maka kadar antosianin makin tinggi, pH makin rendah, *redness* makin tinggi, *lightness* makin rendah, dan *yellowness* makin rendah.
- 3.a. Lama penyimpanan berpengaruh nyata ($\alpha=5\%$) terhadap pH, *redness*, *lightness*, dan *yellowness* yogurt murbei hitam.
- 3.b. Semakin lama disimpan maka pH makin rendah, *redness* makin turun, *lightness* makin tinggi, dan *yellowness* makin tinggi.

6.2. Saran

1. Perlu dilakukan pengujian kadar dan fraksinasi flavonoid dan total fenol baik pada ekstrak murbei maupun yogurt dengan spektfotometer dan kromatografi.
2. Perlu dilakukan pengujian warna yang lebih teliti dengan *chromameter*.

DAFTAR PUSTAKA

- Abbas D.L. Khodaie1, J. Afshar, L. Nahar dan S. D. Sarker. 2010. Isolation and free-radical-scavenging properties of cyanidin 3-O-glycosides from the fruits of *Ribes biebersteinii* Berl. *Acta Pharm.* 60 : 1-11
- AOAC. 2005. *Total Monomeric Anthocyanin Pigment Content of Fruit Juices, Beverages, Natural Colorants, and Wines*. AOAC Chapter 37 p.1.
- Axelsson, L. 1998. *Lactic Acid Bacteria Microbiology and Functional Aspect 2nd ed: Revised and Expanded*. New York: Marcell Dekker, Inc.
- Bakhshayeshi, M.A., M. Khayami, R. Heidari dan R. Jamei. 2006. *The Effect of Light, Storage Temperature, pH and Variety on Stability of Anthocyanin Pigments in Four Malus Varieties*. *Pakistan Journal of Biological Science* 9 (3) : 428-433
- Belitz, H. D., W. Grosch dan P. Schieberle. 2004. *Food Chemistry 3rd revised edition*. Jerman: Springer.
- Buckle, K. A., R. A. Edwards, G. H. Fleet, dan M. Woottton. 1987. *Ilmu Pangan*. (Adiono dan H. Purnomo, penerjemah). Jakarta: UI-Press.
- Carr, J.G, C.V. Cutting dan G.C. Whiting. 1975. *Lactic Acid Bacteria in Beverages and Foods*. London: Academic Press.
- Cinbas, A dan F. Yazici. 2007. Effect of the Addition of Blueberries on Selected Physicochemical and Sensory Properties of Yoghurts. *Food Technol. Biotechnol.* 46 (4) : 434-441
- Clunies E.P., Y. Kakuda, J.M. deMann dan F.Cazzola. 1988. Gelation Profiles of Yogurt as Affected by Heat Treatment of Milk. *J Dairy Sci*, 71, 582-588.
- Codex Alimentarius. 2008. *Codex Standard For Fermented Milk CODEX STAND 243*. Food Agriculture Organization.
- Dalimartha, S. 1999. *Atlas Tumbuhan Obat Indonesia Jilid 1*. Jakarta : Trubus Agriwidya

- DeMann, J.M. 1997. *Kimia Makanan*. Bandung: Penerbit Institut Teknologi Bandung.
- Emmerton, F. 2008. Food Colours. Leatherhead International Ltd and Blackwheel Ltd.
- Ensminger, A. H. 1991. *Food and Nutrition Encyclopedia 2nd Edition*. London: CRC Press
- Erkus, O. 2007. *Isolation, Phenotypic, and Genotypic Characterization of Yoghurt Starter Bacteria* <http://library.iyte.edu.tr/tezler/master/T000641.pdf> (18 Februari 2011).
- Eskin, M. 1979. *Plant Pigments, Flavors, and Textures*. London : Academic Press
- Fardiaz, S. 1989. *Mikrobiologi Pangan: Penuntun Praktek Laboratorium*. Bogor: IPB Jurusan Teknologi Pangan dan Gizi.
- Fasoyiro, S. B., S. O. Babalola, dan T. Owosibo. 2005. Chemical Composition and Sensory Quality of Fruit Flavoured Roselle (*Hibiscus sabdariffa*) Drinks. *World Journal of Agricultural Sciences*. 1 (2) : 161-164
- Francis, F. 1975. *Food Calorimetry: Theory and Application*. Washington: CRC Press.
- Gilliland, S. E. dan R. C. Lara. 1988. Influence of Storage at Freezing and Subsequent Refrigeration Temperatures on 3-Galactosidase Activity of *Lactobacillus acidophilus*. *Appl. and Environmental Microbiology*, 54 (4) : 898-902.
- Giusti, M dan R.E. Wrolstad. 2001. *Characterisation and measurement of Anthocyanins by UV-Visible Spectroscopy In Current Protocol in Food Analytical Chemistry*. New York : John Wiley and Sons, Inc.
- Harborne, J.B. 1996. *Metode Fitokimia : Penuntun Cara Modern Menganalisis Tumbuhan*. Bandung : ITB

- Hasibuan, S. Aplikasi Pewarna Alami Antosianin dari Kelopak Rosella pada Produk Yoghurt dalam Rangka Penganekaragaman Produk Pangan Fungsional. 2009. Skripsi S-1. Fakultas Agribisnis dan Teknologi Pangan. Universitas Djuanda, Bogor.
- Hudson, A., T. Wong, dan R. Lake. 2003. *Pasteurisation of Dairy Products : Times, Temperatures, and Evidence for Control of Pathogens*. New Zealand : Christchurch
- Hui, Y. H., (Ed). 1992. *Dairy Science and Technology Handbook Vol.1: Principles and Properties*. New York: VCH Publishers.
- Imran, M, H. Khan, M. Shah, R. Khan, dan F. Khan. 2010. Chemical Composition and Antioxidant Activity of Certain Morus Species. *J. Zhejiang University-Sci B* (12) : 973-980
- Kartika, B., B. Hastuti., dan W. Supartono. 1998. Pedoman Uji Inderawi Bahan Pangan. Yogyakarta : PAU Pangan dan Gizi UGM
- Kroger, M. 1975. *Quality of Yogurt. J. Dairy Sci.* 59 (2): 344-350.
- Mazza, G. 2007. *Anthocyanins and Heart Health*. Canada: Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada.
- Memon, A. A., N. Memon, D.L. Nutria, M.I. Bhanger dan A.A Pitafi.2010. Phenolic Acids Profiling and Antioxidant Potential of Mulberry (*Morus laevigata* W., *Morus nigra* L., *Morus alba* L) Leaves and Fruits Grown in Pakistan. *Pol.J.Food Nutr. Sci.* 60 (1):25-32
- Murdock, D. H. 2002. *Encyclopedia of Food. A Guide to Healthy Nutrition*. London : Academic Press.
- Nugrahawati, A. R. 2010. Pengaruh Berbagai Variasi Suhu dan Warna Kemasan terhadap Stabilitas Antosianin Kulit Manggis. Skripsi S-1. Fakultas Pertanian Universitas Sebelas Maret, Surakarta.
- Qin. C, Y. Li, W. Niu, Y. Ding, R. Zhang, dan X. Shang. 2010. Analysis and Characterisation of Anthocyanins in Mulberry Fruit. *J. Food Sci.* 28 (2), 117-126

- Rein, M.J. 2005. *Copigmentation Reactions and Color Stability of Berry Anthocyanins*. Available at : http://ethesis.helsinki.fi/julkaisut/maa_skemi/vk/rein_copigmen.pdf. (26 April 2011)
- Sandine, William E. 1976. New Techniques in Handling Lactic Cultures to Enhance Their Performance. *J. Dairy Sci.*, 60 (5), 822-828.
- Shi, Z., M. I. Lin., dan F. J. Francis. 1992. Stability of Anthosianins from *Tradescanicia pallida*. *J. Food Science* 57 (3): 758-760.
- Slocum, S. A., E. M. Jasinski, R. C. Anantheswaran, dan A. Kilara. 1988. Effect of Sucrose on Proteolysis in Yogurt During Incubation and Storage. *J.Dairy Sci.*, 71 : 589-595.
- Srivastava, A. 2006. Effect of Storage Conditions on Phenolic Compounds and Antioxidant Activity of Blueberry Extract and The Effect of Anthocyanins from Selected Cultivars of Georgia Grown Blueberries on Apoptosis and Phase II Enzymes. Available at : http://ugakr.libs.uga.edu/bitstream/handle/10724/9473/srivastava_anita_200612_ms.pdf?sequence=1 (14 Juli 2011)
- Sugiarto, B. 2011. Pengaruh Perbedaan Proporsi Susu dan Ekstrak Murbei Hitam (*Morus Nigra*) dan Waktu Penyimpanan terhadap Aktivitas dan Viabilitas Bakteri Asam Laktat dalam Yogurt. Skripsi S-1. Fakultas Teknologi Pertanian Universitas Katolik Widya Mandala, Surabaya
- Tamime, A. Y. dan R. K. Robinson. 1999. *Yogurt Science and Technology 2nd edition*. England : Woodhead Publishing Limited.
- Tensiska, B., D.S. Kanti dan A.P. Wijaya. 2007. Aplikasi Ekstrak Pigmen Dari Buah Arben (*Rubus idaeus* (Linn.)) Pada Minuman Ringan Dan Kestabilannya Selama Penyimpanan. *Prosiding Seminar Nasional dan Pertemuan Tahunan Perhimpunan Ahli Teknologi Pangan Indonesia (PATPI)*, Bandung, Juli 2007, TP-62.
- Xueming, L, G. Xiao, W. Chen, Y. Xu, dan J. Wu. 2004. Quantification and Purification of Mulberry Anthocyanins with Macroporous Resins. *Journal of Biomedic and Biotechnology*, 15 : 326-331

- Yang, C.H. dan T.C. Tsai. 1994. Anthocyanins in mulberry fruit. *J. Food Sci.*, 21 : 319–330.
- Wahyudi, M., 2006. *Proses Pembuatan dan Analisis Mutu Yoghurt*. Buletin Teknik Pertanian vol 11 (1), 12-16.
- Wallace, T. C. dan M.M. Giusti. 2008. Determination of Color, Pigment, and Phenolic Stability in Yogurt Systems Colored with Nonacylated Anthocyanins from *Berberis boliviiana* L. as Compared to Other Natural / Synthetic Colorants. *J. Food Sci.*, 73 : C242 - 248
- Walstra, P. 1983. *Dairy Chemistry and Phisics*. New York : John Willey and Sons.
- Walford, J. 1990. *Development in Food Colours*. New York : Applied Science Published Ltd.
- Winarno, F.G. 2003. *Kimia Pangan dan Gizi*. Jakarta : Gramedia.
- Winarno, F. G. dan I. E. Fernandez. 2007. *Susu dan Produk Fermentasinya*. Jakarta : M-Brio Press
- Wrolstad, R.E. dan M. M. Giusti. 2001. *Characterization and Measurement of Anthocyanins by UV-Visible Spectroscopy*. New York : John Wiley and Sons, Inc.
- Wrolstad, R.E, R.W. Durst, dan J. Lee. 2005. Tracking Color and Pigment Changes in Anthocyanin Product. *Trends in Food Science and Technology*, 16 : 423-428.
- Zheng, N., P. Bucheli., dan H. Jing. 2009. Effects of Casein and Whey Protein-dextran Conjugates on the Stability of Bog Bilberry Anthocyanin Extract. *Int. J. Food Sci*, 44 : 1452-1458