

BAB V

KESIMPULAN DAN SARAN

5.1. Kesimpulan

1. Penggunaan konsentrasi Na-CMC berpengaruh nyata terhadap sifat fisikokimia tepung buah naga merah yaitu kadar air, aktivitas air, total fenol
2. Peningkatan konsentrasi Na-CMC menurunkan kadar air (7,9%-5,31%), aktivitas air (0,418-0,326), total fenol (3219,8253-2420,7661 mg GAE/kg)
3. Tepung buah naga merah memiliki nilai *lightness* 41,00-44,34, *redness* 17,10-20,95, *yellowness* -2,18-(-3,8), *chroma* 17,24-21,22, *hue* 348,54-352,75.
4. Penggunaan konsentrasi Na-CMC berpengaruh nyata terhadap sifat organoleptik dengan nilai tepung buah naga merah (3,56-4,31)
5. Perlakuan terbaik tepung buah naga merah dengan uji pembobotan adalah penambahan konsentrasi Na-CMC sebanyak 4,75% yang menghasilkan kadar air 5,31%, aktivitas air (0,326), total fenol (2420,7661 mg GAE/kg) dengan kadar serat 18,22%.

5.2. Saran

Perlu dilakukan penelitian untuk mengetahui umur simpan tepung buah naga merah.

DAFTAR PUSTAKA

- Alkalın, G.O. dan Pulat, M. 2018. Preparation and Characterization of Nanoporous Sodium Carboxymethyl Cellulose Hydrogel Beads. *Journal of Nanomaterials*, 3(4):1-12.
- Arora, D.S. 2011. In Vitro Antioxidant Potential of Some Soil Fungi: Screening of Functional Compounds and their Purification from *Penicillium citrinum*. *Journal of Applied Biochemical and Biotechnology*, 11(3): 8-21.
- Association of Official Analytical Chemist (AOAC). 1984. *Official Methods of Analysis*. Washington DC: The Association of Official Analytical Chemist, Inc.
- Association of Official Analytical Chemist (AOAC). 2005. *Official Methods of Analysis*. Washington DC: The Association of Official Analytical Chemist, Inc.
- Association of Official Analytical Chemist (AOAC). 2006. *Official Methods of Analysis*. Washington DC: The Association of Official Analytical Chemist, Inc.
- Azeredo, H.M.C. 2009. Betalains: Properties, Sources, Applications, and Stability. *International Journal of Food Science and Technology*, 44: 2365-2376.
- Badan Pengawas Obat dan Makanan. Peraturan Kepala Badan Pengawas Obat dan Makanan Republik Indonesia Nomor 13 Tahun 2016 tentang Makanan Klaim pada Label dan Iklan Pangan Olahan, Kepala Badan Pengawas Obat dan Makanan.
- Barret, D.M, Somogyi, L. dan Ramaswamy, H.. 2005. *Processing Fruits Science and Technology Second Edition*. London: CRC Press.
- Belitz, H.D. dan Grosch, W. 1987. *Food Chemistry*. Berlin: Springer-Verlag.
- Bulut, E. dan Sanli, O. 2014. Novel Ionically Crosslinked Acrylamide-Grafted Poly(Vinyl Alcohol)/ Sodium Alginate/Sodium Carboxymethyl Cellulose Ph-Sensitive Microspheres for Delivery of Alzheimer's Drug Donepezil Hydrochloride: Preparation and Optimization of Release Conditions, *Journal of Artificial Cells, Nanomedicine, and Biotechnology*. 44(2): 431-442.

- Chia, S.L. dan Chong, G.H. 2015. Effect of Drum Drying on Physico-chemical Characteristics of Dragon Fruit Peel (*Hylocereus polyrhizus*). *Int. J. Food Eng.*, 11(2): 285-293.
- Chopda, C. dan Barret, D. 2001. Optimization of Guava Juice and Powder Production. *Journal of Food Processing Preservation*, 25: 411- 430.
- Clifford, T., Howatson G. dan West, D. 2015. The Potential Benefits of Red Beetroot Supplementation in Health and Disease, *Nutrients Journal*, 7: 2801-2822.
- Dadfar, S. 2015. Mechanical and Water Binding Properties of Carboxymethyl Cellulose/Multiwalled Carbon Nanotube Nanocomposites. *Polymer Composites Journal*, 2(1) 145-152.
- DeGarmo, E., Sullivan W. dan Bontadelli, J. 1993. *Engineering Economy*. New York: Macmillans Publishing Company.
- Fennema, O. R. 1996. *Food Chemistry 3rd edition*. New York: Marcel Dekker.
- Food and Drugs Administration. 2016. *Nutrition Facts Label: Dietary Fiber*.
https://www.accessdata.fda.gov/scripts/interactivenutritionfactslabel/factsheets/Dietary_Fiber.pdf (diakses pada 1 Desember 2019).
- Gonnissen Y., Remon, J. P. dan Vervaet, C. 2008. Effect of Maltodextrin and Superdisintegrant in Directly Compressible Powder Mixtures Prepared via Co-Spray Drying. *European Journal of Pharmaceutics and Biopharmaceutics*, 68: 277–282.
- Gonzales, F., Igual, M. dan Camacho, M. 2018. Impact of Temperature, Gum Arabic and Carboxymethyl Cellulose on Some Physical Properties of Spray-Dried Grapefruit. *International Journal of Food Engineering*, 14(3): 1-15.
- Harmayanti, E., Winarti, R., Nurismanto. 2011. *Preparation of Inulin Powder from Dioscorea Esculanta Tuber with Foam Mat Drying Method*.
http://repository.ugm.ac.id/digitasi/index.php?module=cari_hasil_full&idbuku=4285 (3 Agustus 2019). Hartono, P.A., 2012. Pemanfaatan Kulit Buah Naga Sebagai Pewarna Alami Makanan Pengganti Pewarna Sintesis. *Jurnal Bahan Alam Terbarukan*, 1(2): 19-24.

- Hartono, P.A. 2012. Pemanfaatan Kulit Buah Naga Sebagai Pewarna Alami Makanan Pengganti Pewarna Sintesis. *Jurnal Bahan Alam Terbarukan*, 1(2): 19-24.
- Hutchings, JB. 1999. *Food Color and Appearance*. Marylan: Aspen publisher Inc.
- Jayanti, R. 2010. Kajian Kandungan Senyawa Fungsional dan Karakteristik Sensoris Es Goyang Buah Naga Super Merah. *Skripsi S-1*, Jurusan Teknologi Hasil Pertanian, Universitas Sebelas Maret Surakarta, Surakarta.https://repository.usd.ac.id/12736/2/131434012_full.pdf (3 Agustus 2019).
- Kristanto, D. 2014. *Berkebun Buah Naga*. Jakarta: Penebar Swadaya.
- Krizova, H. 2013. Development of Carboxymethyl Cellulose/Polyphenols Gels for Textile Applications. *AUTEX Research Journal*, 13(2): 33-36.
- Lawless, H.T. dan Heymann, H. 1999. *Sensory Evaluation of Food*. New York: Spinger-Verlag.
- Li, W. dan Sun, B. 2009. Study on Hydrogen Bonds of Carboxymethyl Cellulose Sodium Film with Two-Dimensional Correlation Infrared Spectroscopy. *Carbohydrate Polymers Journal*, 78(3): 454-461.
- Liu, J., Zhang, C., dan Miao, D. 2018. Preparation and Characterization of CarboxymethylCellulose Hydrogel Fibers. *Journal of Engineered Fibers and Fabrics*, 13(3): 6-13.
- Maigoda, T. C. 2016. Pengaruh Tepung Buah Naga Merah (*Hylocereus polyrhizus*) dan Olahraga Renang terhadap Penanda Inflamasi, Stres Oksidatif dan Kebugaran pada Tikus Jantan (*Sprague Dawley*) dengan Obesitas, *Skripsi S-1*, Fakultas Ekologi Manusia IPB, Bandung.<https://repository.ipb.ac.id/bitstream/handle/123456789/81335/2016/tcm.pdf?sequence=1&isAllowed=y> (2 Agustus 2019)
- Muntana, N. dan Prasong, S. 2010. Study on Total Phenolic Contents and Their Antioxidant Activities of Thai White, Red, and Black Rice Bran Extracts. *Pakistan Journal of Biological Sciences*, 13(4):170-174.

- Pangestuty, A. 2016. Uji Aktivitas Antioksidan dan Penetapan Kadar Fenolik Total Fraksi Etil Asetat Ekstrak Etanol Buah Buni dengan Metode DPPH dan Metode Folin-ciocalteu. *Skripsi S-1*, Fakultas Farmasi, Universitas Sanata Dharma. https://repository.usd.ac.id/6531/2/128114114_full.pdf (15 Desember 2019)
- Phebe, D., Chew, M. K. dan Suraini, A. A. 2009. Red-fleshed pitaya (*Hylocereus polyrhizus*) Fruit Colour and Betacyanin Content Depend on Maturity. *International Food Research Journal*, 16(1): 233-242.
- Ramli, N.S., Patimah, I. dan Asmah R. 2014. Influence of Conventional and Ultrasonic-Assisted Extraction on Phenolic Contents, Betacyanin Contents, and Antioxidant Capacity of Red Dragon Fruit (*Hylocereus polyrhizus*). *Scientific World Journal*, 3 (2): 1-7.
- Saifullah, M., Yusof, A. dan Aziz, N. 2014. Tableting and Dissolution Characteristics of Mixed Fruit Powder. *Agriculture and Agricultural Science Procedia Journal*, 2: 18-25.
- Sari,Y., Santoni, A. dan Elisabet, E. 2018. Comparative Test of Color Stability between Betalain Pigments of Red Dragon Fruits and Anthocyanin Pigments from Tamarillo Fruit at Various pH. *Jurnal Kimia Sains Dan Aplikasi*, 21(3): 107-112.
- Singleton, V.L., Orthofer, R., dan Lamuela, R.M. 1999. Analysis of Total Phenols and Other Oxidation Substrates and Antioxidants by Means of Folin-Ciocalteu Reagent. *Journal of Methods in Enzymology*, 14(2): 152-178.
- Sutrisno, E. G. dan Purwanto. 2011. Kajian Penyimpanan Buah Naga (*Hylocereus costaricensis*) dalam Kemasan Atmosfer Termodifikasi. *Jurnal Keteknik Pertanian*, 25(2): 127-132.
- Tze, N. L., Han, C. P. dan Yusof, Y. A., 2012. Physicochemical and Nutritional Properties of Spray-dried Pitaya Fruit Powder as Natural Colorant. *Journal Food Science Biotechnology*, 21(3): 675-682.
- Winarno, F. G. 1992. *Kimia Pangan dan Gizi*. Jakarta: Gramedia.
- Wybraniec, S., Barbara, N. W. dan Katarzyna, M. 2007. Minor Betalains in Fruits of *Hylocereus* Species, *Journal Phytochemistry*, 68(2): 251-259.