

## **BAB V**

### **KESIMPULAN DAN SARAN**

#### **5.1. Kesimpulan**

1. Penggunaan CMC berpengaruh nyata terhadap karakteristik fisikokimia dan organoleptik donat dengan substitusi tepung bekatul. Penggunaan CMC hingga 1,5% dapat meningkatkan volume spesifik, *springiness*, *cohesiveness*, kesukaan terhadap keseragaman pori, kemudahan digigit, dan kelembutan; serta menurunkan kadar air dan *hardness* donat dengan substitusi tepung bekatul.
2. Konsentrasi CMC sebesar 1,5% perlu ditambahkan untuk menghasilkan donat dengan substitusi tepung bekatul dengan karakteristik organoleptik terbaik yang memiliki 5,72 (agak suka-suka), kemudahan digigit 5,32 (agak suka-suka), dan kelembutan 5,18 (agak suka-suka). Sampel donat dengan substitusi bekatul yang ditambahkan 1,5% CMC memiliki kadar air 19,57%; kadar abu 1,45%; kadar protein 5,31%; kadar lemak 31,75%; kadar karbohidrat 41,92%; dan kadar serat 1,03%.

#### **5.2. Saran**

Perlu dilakukan penelitian lanjutan mengenai kadar serat pangan donat dengan substitusi tepung bekatul yang ditambahkan CMC, serta pengaruh konsumsinya secara jangka panjang sebagai pangan fungsional. Bentuk dan ukuran donat bekatul yang digunakan untuk seluruh analisa sebaiknya sama sehingga hasil analisa yang diperoleh lebih akurat.

## DAFTAR PUSTAKA

- AIB International. 2015. *Baking Science and Technology: Function of Ingredients in Bread Production.* [https://www.aibonline.org/aibOnline\\_secure.aibonline.org/courses/contents/BST/Bread/03b\\_BSTFOI\\_RM20151215\\_ENG.pdf](https://www.aibonline.org/aibOnline_secure.aibonline.org/courses/contents/BST/Bread/03b_BSTFOI_RM20151215_ENG.pdf) (Diakses 6 Februari 2019).
- Anggraini, E. F., dan D. Kristiastuti. 2015. Pengaruh Substitusi Bekatul (Rice Bran) terhadap Sifat Organoleptik Donat. *E-Jurnal Boga.* 4(8): 63-70.
- Astawan, M., T. Wresdiyati, S. Widowati, dan I. Saputra. 2013. Aplikasi Tepung Bekatul Fungsional pada Pembuatan Cookies dan Donat yang Bernilai Indeks Glikemik Rendah. *Jurnal Pangan.* 22(4): 385-394.
- Badan Standardisasi Nasional Indonesia. 2000. *SNI 01-2000 tentang Syarat Mutu Donat.* Jakarta: Badan Standardisasi Nasional Indonesia
- Baking Industry Research Trust. 2011. *Yeast-Raised Doughnuts.* [https://www.bakeinfo.co.nz/files/file/432/Bake+Info\\_Info\\_Cake+Doughnuts.pdf](https://www.bakeinfo.co.nz/files/file/432/Bake+Info_Info_Cake+Doughnuts.pdf) (diakses 14 Januari 2019).
- Bekatul Dr Liem. 2019. *Manfaat, Khasiat, dan Kandungan Bekatul (Rice Bran) untuk Pengobatan Penyakit Kencing Manis, Hipertensi, Kolesterol, Asma, Pengapuran Pembuluh Darah, Gangguan Pencernaan, dan Lainnya.* <https://bekatuldrliem.com/> (diakses 4 April 2019).
- Belitz, H. D., W. Grosch, and P. Schieberle. 2009. *Food Chemistry 4th Revised and Extended Edition.* Heidelberg: Springer-Verlag Berlin Heidelberg.
- BeMiller, J. N. 2008. Hydrocolloids. (dalam *Gluten-Free Cereal Products and Beverages*, Arendt, E. K. and F. D. Bello, Eds.). Burlington: Academic Press.
- Bhattacharya, S. (Ed). 2015. *Conventional and Advanced Food Processing Technologies.* Chichester: John Wiley & Sons, Ltd.

- Bloksma, A. H. 1990. Dough Structure, Dough Rheology, and Baking Quality. *Cereal Foods World*. 35: 237–244.
- Bogasari. 2019. *Tepung Terigu Cakra Kembar*. <http://www.bogasari.com/product/brand/cakra-kembar> (4 April 2019).
- Cantor, J. M (Ed.). 2008. *Progress in Food Engineering Research and Development*. New York: Nova Science Publishers, Inc.
- Cauvain, S. P., and L. S. Young. 2000. *Bakery Food Manufacture and Quality: Water Control and Effects*. Oxford: Blackwell Science Ltd.
- Chan, L. A. 2009. *Inspirasi Usaha Membuat Aneka Donat*. Jakarta: PT. AgroMedia Pustaka.
- Cint. 2018. *Indonesia: How Often Do You Eat Fast Food (Any Quick Service Restaurant)*. <https://www.statista.com/statistics/561273/indonesia-average-fast-food-consumption-per-week/> (Diakses 16 Desember 2018)
- deMan, J. M. 1999. *Principles of Food Chemistry Third Edition*. Gaithersburg: Aspen Publishers, Inc.
- Demirkesen, I., S. Kelkar, O. H. Campanella, G. Sumnu, S. Sahin, and M. Okos. 2014. Characterization of structure of gluten-free breads by using X-ray microtomography. *Food Hydrocolloid*. 36: 37-44.
- Edwards, W. P. 2007. *The Science of Bakery Products*. Cambridge: The Royal Society of Chemistry.
- Eliasson, A.-C., and K. Larsson. 1993. *Cereals In Breadmaking: A Molecular Colloidal Approach*. New York: Marcel Dekker.
- Fennema, O. R. 1996. *Food Chemistry 3rd Ed*. New York: Marcel Dekker.
- Figoni, P. 2008. *How Baking Works Second Edition*. New Jersey: John Wiley & Sons, Inc.

- Hanneman, L. J. 1980. *Bakery: Bread & Fermented Goods*. London: Heinemann.
- Hootman, R. C. (Ed.). 1992. *Manual on Descriptive Analysis Testing for Sensory Evaluation*. Philadelphia: American Society for Testing and Materials.
- Hui, Y. H., and W. Zhou (Eds). 2014. *Bakery Products Science and Technology*. Oxford: John Wiley & Sons, Ltd.
- Imeson, A. (Ed.). 2010. *Food Stabilisers, Thickeners and Gelling Agents*. Oxford: Blackwell Publishing.
- Jones, D. 2004. *Pharmaceutical Applications of Polymers for Drug Delivery*. Shropshire: Rapra Technology Limited.
- Kementrian Kesehatan RI. 2018. *Hasil Riskesdas 2018*.  
[http://www.depkes.go.id/resources/download/info-terkini/materi\\_rakorpop\\_2018/Hasil%20Riskesdas%202018.pdf](http://www.depkes.go.id/resources/download/info-terkini/materi_rakorpop_2018/Hasil%20Riskesdas%202018.pdf)  
(Diakses 16 Desember 2018)
- Kodali, D. R. (Ed). 2014. *Trans Fats Replacement Solutions*. Urbana: AOCS Press.
- Laaman, T. R. (Ed). 2011. *Hydrocolloids in Food Processing*. Iowa: Blackwell Publishing, Ltd. And Institute of Food Technologists.
- Larsson, H., and A.-C. Eliasson. 1997. Influence Of The Starch Granule Surface On The Rheological Behaviour Of Wheat Flour Dough. *Journal of Texture Studies*. 1(28): 487–501.
- Lawless, H. T., and H. Heymann. 1998. *Sensory Evaluation of Food: Principles and Practices*. New York: Chapman & Hall.
- Lawson, H. 1995. *Food Oils and Fats: Technology, Utilization, and Nutrition*. Dordrecht: Springer Science+Business Media.
- Lazaridou, A., D. Duta, M. Papageorgiou, N. Belc, and C. Biliaderis. (2007). Effects of Hydrocolloids on Dough Rheology and Bread Quality Parameters in Gluten-Free Formulations. *Journal of Food Engineering*. 79(3): 1033-1047.

- Lestari, L. A., P. M. Lestari, dan F. A. Utami. 2014. *Kandungan Zat Gizi Makanan Khas Yogyakarta*. Yogyakarta: Gadjah Mada University Press.
- Maleki, G., and J. Milani. 2012. Hydrocolloids in Food Industry (dalam *Food Industrial Processes – Methods and Equipment*, Valdez, B. (Ed)). Rijeka: InTech.
- Marti'nez-Anaya, M. A., and T. Jiménez. (1997a). Functionality of enzymes that hydrolyse starch and non-starch polysaccharide in breadmaking. *Zeitschrift fur Lebensmittel-Untersuchung und – Forschung*. 205(1): 209–214.
- Martins, S. I .F. S., W. M. F. Jongen, and M. A. J. S. van Boekel. 2001. A review of Maillard reaction in food and implications to kinetic modelling. *Trends in Food Science & Technology*. 11:364–373.
- Matz, S. A. 1991. *Chemistry and Technology of Cereals as Food and Feed Second Edition*. New York: Van Nostrand Reinhold.
- McWilliams, M. 2006. *Nutrition & Dietetics 8th Ed*. Jurong: Pearson Education, Inc.
- Miller, R. A., and R. C. Hoseney. 2008. Role of Salt in Baking. *Cereal Foods World*. 53(1): 4-6.
- Mir, S. A., M. A. Shah, H. R. Naik, and I. A. Zargar. 2016. Influence of hydrocolloids on dough handling and technological properties of gluten-free breads. *Trends in Food Science & Technology*. 51: 49-57
- Miskelly, D. 2017. Optimisation of End-Product Quality for the Consumer (dalam *Cereal Grains: Assessing and Managing Quality*, Wrigley, C., I. Batey, and D. Miskelly, Eds.). Duxford: Woodhead Publishing.
- Nicolae, A., G. L. Radu, and N. Belc. 2015. Effect Of Sodium Carboxymethyl Cellulose On Gluten-Free Dough Rheology. *Journal of Food Engineering*. 168(1): 16-19.
- Nielsen, S.S. (ed). 1998. *Food Analysis Volume 86*. Gaithersburg: Aspen Publishers.

- Nursalim, Y., dan Z. Y. Razali. 2007. *Bekatul: Makanan yang Menyehatkan*. Jakarta: Agromedia.
- Pareyt, B., S.M. Finnie, J.A. Putseys, and J. A. Delcour. 2011. Lipids in bread making: Sources, interactions, and impact on bread quality. *J Cereal Sci*, 54: 266–79.
- Penfield, M. P., and A. M. Campbell. 1990. *Experimental Food Science 3rd Edition*. San Diego: Academic Press, Inc.
- Pomeranz, Y. 1991. *Functional Properties of Food Components Second Edition*. San Diego: Academic Press, Inc.
- Rychlik, M., and W. Grosch. 1996. Identification and quantification of potent odorants formed by toasting of wheat bread. *LWT – Food Science and Technology*, 29:515–25.
- Sadeghnia, N., M. H. Azizi, M. S. Ardebili, dan M. Mohammadi. 2018. Effect of Xanthan and CMC on Rheological Properties of Gluten Free Bread Dough. *Journal of Food Science and Technology*. 51(13): 137-148.
- Serna-Saldivar, S. O. 2010. *Cereal Grains: Properties, Processing and Nutritional Attributes*. Boca Raton: CRC Press.
- Serna-Saldivar, S. O. 2012. *Cereal Grains: Laboratory Reference and Procedures Manual*. Boca Raton: CRC Press.
- Sidhu, J. P. S., and A. S. Bawa. 2009. Incorporation of Carboxymethyl Cellulose in Wheat Flour: Rheological, Alveographic, Dough Development, Gas Formation/Retention, Baking and Bread Firmness Studies. *International Journal of Food Properties*. 3(3): 407-419.
- Sudarmadji. S., B. Haryono, dan Suhardi. 2010. *Analisis Bahan Makanan dan Pertanian*. Yogyakarta: Liberty.
- Sun, D. W. (Ed). 2012. *Handbook of Frozen Food Processing and Packaging Second Edition*. Boca Raton: CRC Press.
- Sutanto, F. 2006. Pengaruh Tingkat Penggunaan Kappa Karagenan terhadap Sifat Penyerapan Minyak dan Organoleptik Donat. *Skripsi S-1*,

Fakultas Teknologi Pertanian UKWMS, Surabaya.  
[repository.wima.ac.id/1370/](http://repository.wima.ac.id/1370/).

Trisnawati, Y., I. Srianta, I. Nugerahani, Y. Marsono. 2018. Roti Tawar dengan Penambahan Biji Durian Terfermentasi dan Defatted Rice Bran: Evaluasi Sifat Fisikokimia, Sensorik, Nilai Indeks Glikemik, serta Efek Hipoglikemiknya pada Tikus Diabetes Induksi Stz-NA, *Laporan Penelitian Terapan Unggulan Perguruan Tinggi Tahun 2018*. Surabaya: Universitas Katolik Widya Mandala Surabaya.

van Boekel, M. A. J. S. 2006. Formation of flavour compounds in the Maillard reaction. *Biotechnology Advances*. 24:230–3.

Vanin, F. M., T. Lucas, and G. Trystram. 2009. Crust formation and its role during bread baking. *Trends in Food Science & Technology*. 20:333–43.

Wang, Y., Q. Zheng, W. Li, Y. Ma, X. Zhao, and C. Zhang. 2018. Measurement of Free Water in Foods by Secondary Derivative Thermogravimetry. *CyTA – Journal of Food*. 16(1): 438-443.

Wilson, D. 2012. *A Baker's Field Guide to Doughnuts: More Than 60 Warm and Fresh Homemade Treats*. Boston: The Harvard Common Press.

Wolever, T. M. S. 2006. *The Glycaemic Index: A Physiological Classification of Dietary Carbohydrate*. Oxfordshire: CAB International.

Wüstenberg, T. 2015. *Cellulose and Cellulose Derivatives in the Food Industry: Fundamentals and Applications First Edition*. Pinneberg: Wiley-VCH Verlag GmbH & Co. KGaA.