DAFTAR PUSTAKA

Abustam, E. 2012. Ilmu Daging, Aspek Produksi Kimia, Biokimia, dan Kualitas. Massgena Press: Makassar

Anderson, Destinee R., 2008, *Ohmic Heating as an Alternative Food Processing Technology, Kansas State University, Kansas*.

Basuki, Latifah, dan I. E. Wulandari. 2012. Kajian penambahan tepung tapioka dan kuning telur pada pembuatan bakso daging sapi. Jurnal Teknologi Pangan. 6 (1).

Berk. Z. 2009. *Food Process Engineering and Technology, Acamdemic Press : New York.*

Bernofsky, C., Fox, J. B., & Schweigert, B. S. (1959). *Biochemistry of myoglobin. VII. The effect of cooking on myoglobin in beef muscle. Journal of Food Science.* 24: 339–343.

Bozkurt dan Icier. 2010. *Ohmic cooking of ground beef: Effects on quality. Journal of Food Engineering.* 96(7): 481–490

Chrismanuel, A., Y. B. Pramono, dan B. E. Setyani. 2012. Efek pemanfaatan karaginan sebagai edibel coating terhadap pH, total mikroba, dan H_2S pada bakso selama penyimpanan 16 jam. Jurnal Agriculture. 1(2): 286-292

Dransfield, E., M. A. Francombe, dan O. P. Whelehan. 1984. *Relationships between sensory attributes in cooked meat. Journal of Texture Studies.* 15(1): 33-48

Engchuan, W., W. Jittanit, dan W. Garnjanagoonchorn. 2014. *The ohmic heating of meat ball: modeling and quality determination. Innovative Food Science and Emerging Technologies.* 10(2): 1-10

Farida, E. Abustam, dan S. Kadir. 2012. Kualitas sensorik dan hedonik bakso kelinci prarigor dan pascarigor dengan penambahan kombinasi tepung kanji dan tepung sagu pada level yang berbeda. Jurnal Ilmu Teknologi Peternakan. 2(2): 129-137

Haryadi. (1995). Kimia dan Teknologi Pati. Yogyakarta: Program Pasca Sarjana Universitas Gajah Mada

Hatta, M dan E. Murpiningrum. 2012. Kualitas bakso daging sapi dengan penambahan garam (nacl) dan fosfat (sodium tripolifosfat/stpp) pada level dan waktu yang berbeda. Jurnal Ilmu Teknologi Peternakan. 2(1): 30-38

Hayriye, B., dan Filiz. 2010 *Electrical conductivity changes of minced beef–fat blends during ohmic cooking. Journal of Food Engineering*. 96: 86-92.

Huda, N., Shen, Y. H., Huey, Y. L., Ahmad, R., & Mardiah, A. (2010). *Evaluation of physicchemical properties of Malaysian commercial beef meatballs. American Journal of Food Technology*. 5(1): 13–21.

Icier, F., 2012, *Novel Thermal and Non-Thermal Technologies for Fluid Foods. Academic Press, New York*.

Kristinsson, H.G., Rasco, B.A., 2000. *Fish protein hydrolysates: production, biochemical, and functional properties. Critical Review in Food Science and Nutrition* 40:43–81

Muhtadi, R. dan T., Ayustaningwarno, F., 2010. Teknologi Proses Pengolahan Pangan. Penerbit Alfabeta. Bandung.

Omodara MA, dan Olaniyan AM. 2012. *Effects of pretreatments and drying temperatures on drying rate and quality of African Catfish (Clarias gariepinus). Journal of Biology, Agriculture and Healthcare*. 2(4) :1-10.

Piette G, M. Buteau, D. D. Halleux, L. Chiu, Y. Raymond, H. S. Ramaswamy, dan M. Dostie. 2004. *Ohmic cooking of processed meats and its effects on product quality. Journal of Food Science*. 69(2): 71-78.

Ramaswamy, R., Balasubramaniam, V.M (Bala)., Sastry, S.K.. 2003. *Ohmic Heating of Foods Fact Sheet for Food Processors. Ohio State University, Columbus*.

Ruan, R., Ye, P., Chen dan Doona, C.J., 2001, Thermal Tecnologies in Food Processing, CRC Press, New York.

Sakr, M., dan Shuli. 2014. *A comprehensive review on applications of ohmi heating. Renewable and Sustainable Energy Review*. (39): 262-269

Salengke, S. 2000. *Electrothermal Effects of Ohmic Heating on Biomaterials. Ph.D. issertation, The Ohio State University, Columbus, OH*.

Salengke, S., dan Sastry, S.K. 1999. *Comparative modeling study of ohmic heating of Solid-liquid mixture. Institute of Food technologists Annual Meeting. Chicago – Illinois, USA*.

Sastry, S. K., dan Barach. 2002. *Ohmic heating and moderate electric field (MEF) processing, Journal of Engineering and Food for the 21st Century.* (47): 785-791

Sengun, I. Y., G. Y. Turp, F. Icier, P. Kendirci, dan G. Kor. 2014. *Effects of ohmic heating for pre-cooking of meatballs on some quality and safety attributes. Journal Food Science and Technology.* 55(2): 232-239

Simon A., Grohens Y., Vandanjon L., Bourseau P., Balnois E., Levesque G., 2003. *A comparative study of the rheological and structural properties of gelatin gels of mammalian and fi sh origins.* Macromol. Symp. 203, 331-338

Shirsat, N., Brunton, N. P., Lyng, J. G., McKenna, B., dan Scannell, A. 2004. *Texture, colour and sensory evaluation of a conventionally and ohmically cooked meat emulsion batter. Journal of the Science of Food and Agriculture.* 84(14): 1861–1870.

Sinaga, T. T. Nugroho, dan A. Dahliaty. Pemekatan enzim selulase penicillium sp. lbkurcc20 dengan pengendapan amonium sulfat 80% jenuh. Binawidya: Pekanbaru

Sofii, Imam., dan H. S. Sumardi. 2017. Pengaruh kadar garam terhadap suhu pada pemanasan Ohmik. Seminar. Institut Teknologi Nasional, Malang.

Tranggono. 1990. Bahan Tambahan Makanan. PAU Pangan dan Gizi, Universitas Gadjahmada: Yogyakarta.

USA-FDA. 2000. *Kinetics of microbial inactivation for alternative food processing technologies: ohmic and inductive heating. United States of America, Food and Drug Administration, Center for Food Safety and Applied Nutrition.*

Vaclavic, V.A. dan E.W. Christian. 2003. *Essentials of Food Science. Springer. New York*

Vasanthi, C., Venkataramanujam, V., & Dushyanthan, K. 2007. *Effect of cooking temperature and time on the physico-chemical, histological and sensory properties of female carabeef (buffalo) meat. Meat Science.* 76: 274–280.

Zareifard, M. R., H.S. Ramaswamy, M. Trigui,dan M. Marcotte. 2003 *Ohmic heating behaviour and electrical conductivity of two-phase food Systems. Innovative Food Science and Emerging Technologies.* 4: 45–55.

Zell, M., Lyng, J. G., Cronin, D. A., & Morgan, D. J. 2009. *Ohmic cooking of whole beef muscle optimisation of meat preparation. Meat Science.* 81: 693–698.

Zell, M., Lyng, J. G., Cronin, D. A., & Morgan, D. J. 2010. *Ohmic cooking of whole turkey meat — Effect of rapid ohmic heating on selected product parameters. Food Chemistry.* 120: 724–729.

LAMPIRAN

Lampiran 1. Analisis Statistik Nilai Uji Organoleptik Warna Bakso Pada level Garam dan Lama Pemasakan Ohmik yang Berbeda

Nilai Rata-rata dan Standar Deviasi Data Uji Organoleptik Warna

Kadar Garam	Waktu Pemasakan	Mean	Std. Deviation	N
Garam 2%	5 Menit	4.0667	.11547	3
	10 Menit	3.2000	.00000	3
	15 Menit	3.0667	.11547	3
	Total	3.4444	.47726	9
Garam 3%	5 Menit	3.3333	.41633	3
	10 Menit	3.3333	.50332	3
	15 Menit	3.2000	.20000	3
	Total	3.2889	.34801	9
Garam 4%	5 Menit	2.4000	.20000	3
	10 Menit	2.0000	.34641	3
	15 Menit	2.6667	.30551	3
	Total	2.3556	.38442	9
Total	5 Menit	3.2667	.76158	9
	10 Menit	2.8444	.70553	9
	15 Menit	2.9778	.30732	9
	Total	3.0296	.62684	27

Uji Homogenitas Data Uji Organoleptik Warna

F	df1	df2	Sig.
2.423	8	18	.057

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + G + W + G * W

Analisis Ragam Data Uji Organoleptik Warna

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8.723[a]	8	1.090	13.143	.000
Intercept	247.824	1	247.824	2.987E3	.000
G	6.243	2	3.121	37.625	.000
W	.839	2	.419	5.054	.018
G * W	1.641	4	.410	4.946	.007
Error	1.493	18	.083		
Total	258.040	27			

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8.723[a]	8	1.090	13.143	.000
Intercept	247.824	1	247.824	2.987E3	.000
G	6.243	2	3.121	37.625	.000
W	.839	2	.419	5.054	.018
G * W	1.641	4	.410	4.946	.007
Error	1.493	18	.083		
Total	258.040	27			
Corrected Total	10.216	26			

a. R Squared = .854 (Adjusted R Squared = .789)

Uji Lanjut Duncan Data Uji Organoleptik Warna
a. Garam

	Kadar Garam	N	Subset	
			1	2
Duncan[a]	Garam 4%	9	2.3556	
	Garam 3%	9		3.2889
	Garam 2%	9		3.4444
	Sig.		1.000	.267

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .083.
a. Uses Harmonic Mean Sample Size = 9.000.

b. Waktu

	Waktu Pemasakan	N	Subset	
			1	2
Duncan[a]	10 Menit	9	2.8444	
	15 Menit	9	2.9778	
	5 Menit	9		3.2667
	Sig.		.339	1.000

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .083.
a. Uses Harmonic Mean Sample Size = 9.000.

Lampiran 2. Analisis Statistik Nilai Uji Organoleptik Keempukan Bakso Pada level Garam dan Lama Pemasakan Ohmik yang Berbeda

Nilai Rata-rata dan Standar Deviasi Data Uji Organoleptik Keempukan

Kadar Garam	Waktu Pemasakan	Mean	Std. Deviation	N
Garam 2%	5 Menit	3.0000	.20000	3
	10 Menit	2.7333	.70238	3
	15 Menit	3.2667	.11547	3
	Total	3.0000	.43589	9
Garam 3%	5 Menit	3.4667	.23094	3
	10 Menit	3.2667	.23094	3
	15 Menit	3.2000	.20000	3
	Total	3.3111	.22608	9
Garam 4%	5 Menit	3.8000	.34641	3
	10 Menit	3.7333	.23094	3
	15 Menit	3.8000	.20000	3
	Total	3.7778	.23333	9
Total	5 Menit	3.4222	.41767	9
	10 Menit	3.2444	.58119	9
	15 Menit	3.4222	.32318	9
	Total	3.3630	.44389	27

Uji Homogenitas Data Uji Organoleptik Keempukan

F	df1	df2	Sig.
1.871	8	18	.128

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + G + W + G * W

Analisis Ragam Data Uji Organoleptik Keempukan

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.310[a]	8	.414	4.107	.006
Intercept	305.357	1	305.357	3.031E3	.000
G	2.759	2	1.379	13.691	.000
W	.190	2	.095	.941	.409
G * W	.361	4	.090	.897	.486
Error	1.813	18	.101		
Total	310.480	27			
Corrected Total	5.123	26			

a. R Squared = .646 (Adjusted R Squared = .489)

Uji Lanjut Duncan Data Uji Organoleptik Keempukan

a. Garam

	Kadar Garam	N	Subset	
			1	2
Duncan[a]	Garam 2%	9	3.0000	
	Garam 3%	9	3.3111	
	Garam 4%	9		3.7778
	Sig.		.052	1.000

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .101.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Waktu

	Waktu Pemasakan	N	Subset
			1
Duncan[a]	10 Menit	9	3.2444
	15 Menit	9	3.4222
	5 Menit	9	3.4222
	Sig.		.275

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .101.

a. Uses Harmonic Mean Sample Size = 9.000.

Lampiran 3. Analisis Statistik Nilai Uji Organoleptik Aroma Bakso Pada level Garam dan Lama Pemasakan Ohmik yang Berbeda

Nilai Rata-rata dan Standar Deviasi Data Uji Organoleptik Aroma

Kadar Garam	Waktu Pemasakan	Mean	Std. Deviation	N
Garam 2%	5 Menit	3.8667	.30551	3
	10 Menit	3.7333	.11547	3
	15 Menit	3.6000	.34641	3
	Total	3.7333	.26458	9
Garam 3%	5 Menit	3.8000	.20000	3
	10 Menit	3.2667	.11547	3
	15 Menit	3.6000	.34641	3
	Total	3.5556	.31269	9
Garam 4%	5 Menit	3.4667	.41633	3
	10 Menit	3.8667	.30551	3
	15 Menit	3.4000	.20000	3
	Total	3.5778	.35277	9
Total	5 Menit	3.7111	.33333	9
	10 Menit	3.6222	.32318	9
	15 Menit	3.5333	.28284	9
	Total	3.6222	.31050	27

Uji Homogenitas Data Uji Organoleptik Aroma

F	df1	df2	Sig.
1.518	8	18	.219

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + G + W + G * W

Analisis Ragam Data Uji Organoleptik Aroma

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1.093[a]	8	.137	1.741	.157
Intercept	354.253	1	354.253	4.512E3	.000
G	.169	2	.084	1.075	.362
W	.142	2	.071	.906	.422
G * W	.782	4	.196	2.491	.080
Error	1.413	18	.079		
Total	356.760	27			
Corrected Total	2.507	26			

a. R Squared = .436 (Adjusted R Squared = .186)

Uji Lanjut Duncan Data Uji Organoleptik Aroma

a. Garam

	Kadar Garam	N	Subset
			1
Duncan[a]	Garam 3%	9	3.5556
	Garam 4%	9	3.5778
	Garam 2%	9	3.7333
	Sig.		.218

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .079.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Waktu

	Waktu Pemasakan	N	Subset
			1
Duncan[a]	15 Menit	9	3.5333
	10 Menit	9	3.6222
	5 Menit	9	3.7111
	Sig.		.218

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .079.

a. Uses Harmonic Mean Sample Size = 9.000.

Lampiran 4. Analisis Statistik Nilai Uji Organoleptik Rasa Bakso Pada level Garam dan Lama Pemasakan Ohmik yang Berbeda

Nilai Rata-rata dan Standar Deviasi Data Uji Organoleptik Rasa

Kadar Garam	Waktu Pemasakan	Mean	Std. Deviation	N
Garam 2%	5 Menit	3.9333	.23094	3
	10 Menit	3.4667	.11547	3
	15 Menit	3.6000	.00000	3
	Total	3.6667	.24495	9
Garam 3%	5 Menit	3.0000	.20000	3
	10 Menit	3.3333	.11547	3
	15 Menit	2.6667	.23094	3
	Total	3.0000	.33166	9
Garam 4%	5 Menit	2.8667	.23094	3
	10 Menit	3.2000	.20000	3
	15 Menit	2.9333	.11547	3
	Total	3.0000	.22361	9
Total	5 Menit	3.2667	.53852	9
	10 Menit	3.3333	.17321	9
	15 Menit	3.0667	.43589	9
	Total	3.2222	.41262	27

Uji Homogenitas Data Uji Organoleptik Rasa

F	df1	df2	Sig.
1.909	8	18	.121

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + G + W + G * W

Analisis Ragam Data Uji Organoleptik Rasa

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.867[a]	8	.483	15.536	.000
Intercept	280.333	1	280.333	9.011E3	.000
G	2.667	2	1.333	42.857	.000
W	.347	2	.173	5.571	.013
G * W	.853	4	.213	6.857	.002
Error	.560	18	.031		
Total	284.760	27			
Corrected Total	4.427	26			

a. R Squared = .873 (Adjusted R Squared = .817)

Uji Lanjut Duncan Data Uji Organoleptik Rasa

a. Garam

	Kadar Garam	N	Subset	
			1	2
Duncan[a]	Garam 3%	9	3.0000	
	Garam 4%	9	3.0000	
	Garam 2%	9		3.6667
	Sig.		1.000	1.000

Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .031.

a. Uses Harmonic Mean Sample Size = 9.000.

b. Waktu

	Waktu Pemasakan	N	Subset	
			1	2
Duncan[a]	15 Menit	9	3.0667	
	5 Menit	9		3.2667
	10 Menit	9		3.3333
	Sig.		1.000	.433

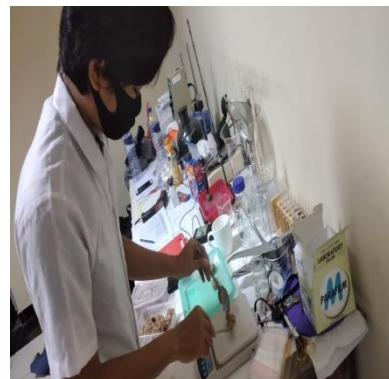Means for groups in homogeneous subsets are displayed.
 Based on observed means.
 The error term is Mean Square(Error) = .031.

a. Uses Harmonic Mean Sample Size = 9.000.

Lampiran 5. Dokumentasi Penelitian

Penimbangan Bahan

Pembuatan Adonan Bakso

Proses Pemasakan Bakso

Proses Pemasakan Bakso

Proses Pemasakan Bakso

Proses Pemasakan Bakso

Pengujian Organoleptik Bakso Ohmik

Pengujian Organoleptik Bakso Ohmik

Pengujian Organoleptik Bakso Ohmik

Pengujian Organoleptik Bakso Ohmik

RIWAYAT HIDUP

Nurfauzan, Lahir di Ujung Pandang pada tanggal 5 April 1999, sebagai anak kedua dari pasangan bapak Drs. Mustapa dan ibu Dra. Muliati Tutu serat cucu kesayangan dari pasangan Saharia daeng Sangnging dan Sahaka daeng Tutu. Penulis memiliki saudara yang bernama Nurfauziah yang sedang menempuh kuliahnya di fakultas matematika dan ilmu pengetahuan alam jurusan statistika dan memilki seorang adik yang bernama nurfikri yang juga sedang menempuh pendidikannya di MAN 2 Kota Makassar. Pekerjaan ayahnya ialah seorang guru matematika di SMPN 2 Polongbangkeng Utara Takalar dan ibunya ialah seorang guru mata pelajaran bahasa indonesia di SMAN 2 Sungguminasa Gowa Memiliki hobi bermain game dan membaca buku ensiklopedia pengetahuan serta pandai menggambar kartun sejak kecil. Sewaktu kanak-kanak, Fauzan atau yang kerap disapa ojeng merupakan anak yang sangat nakal serta bandel. Penulis sering keluyuran keluar rumah berpetualang mencari kebahagiaan serta mencari pengalaman yang berharga. Bahkan sewaktu kecil, setiap naik kelas penulis selalu berkelahi dengan teman sekelas nya apapun itu masalahnya. Namun disamping itu, penulis merupakan anak yang berprestasi terutama di bidang ilmu biologi. Bakat itu muncul ketika penulis masih berada di bangku SMP dimana ulangan biologi yang selalu diberikan tidak pernah remedial sama sekali serta mendapatkan nilai yang cukup tinggi di nilai raportnya. Dimasa SMA, penulis merupakan orang yang pandai dalam kelas terutama dalam mata pelajaran biologi.