LAMPIRAN

Lampiran 1. Desain Penentuan Proporsi Setiap Taraf Perlakuan
P1 (70:30:0)

Bahan	Berat (g)	Energi (Kkal)	Protein (g)	Lemak (g)	KH (g)	Fe (mg)	vit.C (mg)
Tempe	280	562.8	58.2	24.6	37.8	11.2	0.0
Hati Ayam Broiler	120	313.2	32.88	19.32	1.92	18.96	0
Brokoli	0	0.00	0.00	0.00	0.00	0.00	0.00
Telur Ayam Ras Negeri	50	77.0	6.2	5.4	0.4	1.5	0.0
Tepung Terigu	80	266.4	7.2	0.8	61.8	1.0	0.0
Gula	10	39.4	0.0	0.0	9.4	0.0	0.0
Tepung Panir	100	333.0	10.00	0.00	73.30	3.60	0.00
minyak kelapa sawit	10	88.40	0.00	10.00	0.00	0.00	0.00
Total		**1680.2**	**114.5**	**60.2**	**184.5**	**36.3**	**0.0**
Kadar Gizi Per 100 g		**336.0**	**22.9**	**12.0**	**36.9**	**12.1**	**0.0**
Penyerapan Zat Besi						**2.4**	
Standar Kebutuhan		**450**	**10**	**20**	**34**	**11**	**43**

P2 (20:60:20)

Bahan	Berat (g)	Energi (Kkal)	Protein (g)	Lemak (g)	KH (g)	Fe (mg)	vit.C (mg)
Tempe	80	160.8	16.6	7.0	10.8	3.2	0.0
Hati Ayam Broiler	240	626.40	65.76	38.64	3.84	37.92	0
Brokoli	80	27.20	2.24	0.32	5.28	0.56	71.20
Telur Ayam Ras Negeri	50	77.0	6.2	5.4	0.4	1.5	0.0
Tepung Terigu	80	266.4	7.2	0.8	61.8	1.0	0.0
Gula	10	39.4	0.0	0.0	9.4	0.0	0.0
Tepung Panir	100	333.00	10.00	0.00	73.30	3.60	0.00
minyak kelapa sawit	10	88.40	0.00	10.00	0.00	0.00	0.00
Total		**1618.6**	**108.0**	**62.2**	**164.7**	**47.8**	**71.2**
Kadar Gizi Per 100 g		**323.7**	**21.6**	**12.4**	**32.9**	**15.9**	**14.2**
Penyerapan Zat Besi						**4.0**	
Standar Kebutuhan		**450**	**10**	**20**	**34**	**11**	**43**

P3 (20:50:30)

Bahan	Berat (g)	Energi (Kkal)	Protein (g)	Lemak (g)	KH (g)	Fe (mg)	vit.C (mg)
Tempe	80	160.8	16.6	7.0	10.8	3.2	0.0
Hati Ayam Broiler	200	522.00	54.8	32.20	3.2	31.6	0
Brokoli	120	40.80	3.36	0.48	7.92	0.84	106.80
Telur Ayam Ras Negeri	50	77.0	6.2	5.4	0.4	1.5	0.0
Tepung Terigu	80	266.4	7.2	0.8	61.8	1.0	0.0
Gula	10	39.4	0.0	0.0	9.4	0.0	0.0
Tepung Panir	100	333.00	10.00	0.00	73.30	3.60	0.00
minyak kelapa sawit	10	88.40	0.00	10.00	0.00	0.00	0.00
Total		**1527.8**	**98.2**	**55.9**	**166.7**	**41.8**	**106.8**
Kadar Gizi Per 100 g		**305.6**	**19.6**	**11.2**	**33.3**	**13.9**	**21.4**
Penyerapan Zat Besi						**3.5**	
Standar Kebutuhan		**450**	**10**	**20**	**34**	**11**	**43**

P4 (20:40:40)

Bahan	Berat (g)	Energi (Kkal)	Protein (g)	Lemak (g)	KH (g)	Fe (mg)	vit.C (mg)
Tempe	80	160.8	16.6	7.0	10.8	3.2	0.0
Hati Ayam Broiler	160	417.60	43.84	25.76	2.56	25.28	0
Brokoli	160	54.40	4.48	0.64	10.56	1.12	142.40
Telur Ayam Ras Negeri	50	77.0	6.2	5.4	0.4	1.5	0.0
Tepung Terigu	80	266.4	7.2	0.8	61.8	1.0	0.0
Gula	10	39.4	0.0	0.0	9.4	0.0	0.0
Tepung Panir	100	333.00	10.00	0.00	73.30	3.60	0.00
minyak kelapa sawit	10	88.40	0.00	10.00	0.00	0.00	0.00
Total		**1437.0**	**88.4**	**49.6**	**168.7**	**35.8**	**142.4**
Kadar Gizi Per 100 g		**287.4**	**17.7**	**9.9**	**33.7**	**11.9**	**28.5**
Penyerapan Zat Besi						**3.0**	
Standar Kebutuhan		**450**	**10**	**20**	**34**	**11**	**43**

Lampiran 2. Perhitungan Skor Asam Amino dan Mutu Cerna Protein

Skor Asam Amino

P1 (70:30:0)

No	Bahan Makanan	Berat (g)	Protein (g)	Kadar Asam Amino			
				Lisin (mg)	Treonin (mg)	Triptofan (mg)	Sistin + Metionin (mg)
1	Tempe *	280	58.2	2716	1232	364	1820
2	Hati Ayam Broiler **	120	32.9	1596	870	211.2	844.8
3	Telur **	50	6.2	456	278	83.5	326
4	Tepung Terigu**	80	7.2	184.8	256	111.2	383.2
Jumlah			104.5	4952.8	2636	769.9	3374
Total mg/g protein campuran				47.4	25.2	7.4	32.3
Pola FAO/WHO/UNU (2007), mg/g protein ***				47.0	24.0	6.3	23.0
Skor Asam Amino (SAA) (%)				100.8	105.1	116.9	140.4

Sumber : * (Utari, Diah M. *et al.*, 2011)
** (Agriculture, 2018)
*** (FAO, 2007)

P2 (20:60:20)

No	Bahan Makanan	Berat (g)	Protein (g)	Kadar Asam Amino			
				Lisin (mg)	Treonin (mg)	Triptofan (mg)	Sistin + Metionin (mg)
1	Tempe *	80	17	760.0	352.0	104.0	520.0
2	Hati Ayam **	240	66	3192.0	1740.0	422.4	1689.6
3	Telur **	50	6	456.0	278.0	83.5	326.0
4	Brokoli **	80	2	108.0	70.4	26.4	52.8
5	Tepung Terigu **	80	7	184.8	256.0	111.2	383.2
Jumlah			98.0	4700.8	2696.4	747.5	2971.6
Total mg/g protein campuran				47.9	27.5	7.6	30.3
Pola FAO/WHO/UNU (2007), mg/g protein ***				47.0	24.0	6.3	23.0
Skor Asam Amino (SAA) (%)				102.0	114.6	121.0	131.8

Sumber : * (Utari, Diah M. *et al.*, 2011)
** (Agriculture, 2018)
*** (FAO, 2007)

P3 (20:50:30)

No	Bahan Makanan	Berat (g)	Protein (g)	Kadar Asam Amino			
				Lisin (mg)	Treonin (mg)	Triptofan (mg)	Sistin + Metionin (mg)
1	Tempe *	80	17	760	352	104	520
2	Hati Ayam **	200	55	2660	1450	352	1408
3	Telur **	50	6	456	278	84	326
4	Brokoli **	120	3	162	106	40	79
5	Tepung Terigu **	80	7	185	256	111	383
Jumlah			88	4223	2442	690	2716
Total mg/g protein campuran				47.9	27.7	7.8	30.8
Pola FAO/WHO/UNU (2007), mg/g protein ***				47.0	24.0	6.3	23.0
Skor Asam Amino (SAA) (%)				101.9	115.3	124.2	133.9

Sumber : * (Utari, Diah M. *et al.*, 2011)
** (Agriculture, 2018)
*** (FAO, 2007)

P4 (20:40:40)

No	Bahan Makanan	Berat (g)	Protein (g)	Kadar Asam Amino			
				Lisin (mg)	Treonin (mg)	Triptofan (mg)	Sistin + Metionin (mg)
1	Tempe *	80	17	760	352	104	520
2	Hati Ayam Broiler **	160	44	2128	1160	282	1126
3	Telur **	50	6	456	278	84	326
4	Brokoli **	160	4	216	141	53	106
5	Tepung Terigu **	80	7	185	256	111	383
Jumlah			78.4	3744.8	2186.8	633.1	2461.2
Total mg/g protein campuran				47.8	27.9	8.1	31.4
Pola FAO/WHO/UNU (2007), mg/g protein ***				47.0	24.0	6.3	23.0
Skor Asam Amino (SAA) (%)				101.7	116.3	128.2	136.6

Sumber : * (Utari, Diah M. *et al.*, 2011)
** (Agriculture, 2018)
*** (FAO, 2007)

Mutu Cerna Protein
P1 (70:30:0)

Bahan	Kadar Protein	Mc Bioasay *	Kadar Protein X Mc Bioassay
Tempe	58.2	90.0	5241.6
Hati Ayam	32.9	97.0	3191.3
Telur	6.2	100.0	620.0
Tepung Terigu	7.2	96.0	691.2
Jumlah	104.5		9744.1
Mutu Cerna Teroritis (Mc)	$\frac{9744.1}{104.5}$	93.2	

Sumber : ***** (Martianto, 1992)

P2 (20:60:20)

Bahan	Kadar Protein	Mc Bioasay *	Kadar Protein X Mc Bioassay
Tempe	17	90	1530
Hati Ayam	66	97	6402
Telur	6	100	600
Brokoli	2	67	134
Tepung Terigu	7	96	672
Jumlah	98		9338
Mutu Cerna Teroritis (Mc)	$\frac{9338}{98}$	95.2	

P3 (20:50:30)

Bahan	Kadar Protein	Mc Bioasay *	Kadar Protein X Mc Bioassay
Tempe	17	90	1530
Hati Ayam	55	97	5335
Telur	6	100	600
Brokoli	3	67	201
Tepung Terigu	7	96	672
Jumlah	88		8338
Mutu Cerna Teroritis (Mc)	$\frac{8338}{88}$	94.7	

P4 (20:40:40)

Bahan	Kadar Protein	Mc Bioasay *	Kadar Protein X Mc Bioassay
Tempe	17	90	1530
Hati Ayam	44	97	4268
Telur	6	100	600
Brokoli	4	67	268
Tepung Terigu	7	96	672
Jumlah	78		7338
Mutu Cerna Teroritis (Mc)	$\frac{7338}{87}$	94	

NPU (Net Protein Utilization)

Taraf Perlakuan	Skor Asam Amino	Mutu Cerna	NPU (SAA x MC)
P1	100	93.2	93.2
P2	100	95.2	95.2
P3	100	94.7	94.7
P4	100	94	94.0

Lampiran 3. Langkah-langkah randomisasi unit penelitian dan penentuan desain penelitian

Penempatan unit penelitian digunakan randomisasi atau pengacakan dengan langkah-langkah yang terdapat pada Lampiran 2. Selanjutnya *lay-out* penelitian disajikan dengan desain Rancangan Acak Lengkap (RAL) dengan 4 perlakuan dan 3 replikasi seperti yang disajikan pada Tabel 12.

Tabel .12 Layout Penelitian Desain Rancangan Acak Lengkap

1 X_{33}	**2** X_{43}	**3** X_{41}
4 X_{32}	**5** X_{42}	**6** X_{13}
7 X_{21}	**8** X_{31}	**9** X_{11}
10 X_{12}	**11** X_{22}	**12** X_{23}

Keterangan :

1-12 : Nomor urut (Penempatan Unit)

X_1-X_{12} : Unit Penelitian

Besar unit penelitian mempunyai peluang yang sama untuk mendapatkan perlakuan, makan dalam penempatan unit penelitian digunakan randomisasi atau pengacakan dengan langkah-langkah sebagai berikut :

a. Memberi nomor urut pada semua unit penelitian, yaitu 1-12.
b. Mengambil bilangan random dari buku, menggunakan 3 digit sebanyak jumlah unit penelitian sebagaimana disajikan pada Tabel 9 .
c. Memberi rangking pada bilangan random yang diperoleh (Tabel 9).
d. Dengan menggunakan prinsip permutasi sederhana, maka nomor rangking dapat dianggap mewakili nomor urut sesuai dengan jumlah unit penelitian. Dengan demikian taraf perlakuan P1 akan diulang 3 kali dan ditempatkan pada unit penelitian nomor 9, 10, dan 6. P2 akan diulang 3 kali dan ditempatkan pada unit penelitian nomor 7, 11, dan 12. Taraf perlakuan P3 akan diulang 3 kali dan ditempatkan pada unit penelitian 8, 4, dan 1. Taraf

perlakuan P4 akan diulang 3 kali dan ditempatkan pada unit penelitian 3, 5, dan 2.

e. Memasukkan unit penelitian dalam layout.

f. Urutan 1 ditempati oleh unit penelitian $X_{23,}$ urutan 2 ditempati oleh unit penelitian X_{33}, urutan 3 ditempati oleh unit penelitian X_{31} dan seterusnya sampai urutan 12 ditempati unit penelitian $X_{13.}$

1 530 9	**2** 877 12	**3** 639 10
4 489 8	**5** 765 11	**6** 174 3
7 270 4	**8** 453 7	**9** 124 1
10 146 2	**11** 360 5	**12** 419 6

Baris pertama : Nomor urut penelitian (Penempatan Unit Penelitian sebelum randomisasi)

Baris kedua : Bilangan Random

Baris Ketiga : Rangking (Penempatan Unit Penelitian Setelah Randomisasi)

Tabel Penempatan Rangking dan Unit Penelitian

No	Bilangan random	Rangking	Unit Penelitian
1	530	9	X_{33}
2	877	12	X_{43}
3	639	10	X_{41}
4	489	8	X_{32}
5	765	11	X_{42}
6	174	3	X_{13}
7	270	4	X_{21}
8	453	7	X_{31}
9	124	1	X_{11}
10	146	2	X_{12}
11	360	5	X_{22}
12	419	6	X_{23}

Lampiran 4. Formulir Uji Skala Kesukaan (*Hedonic scale Test*)

Formulir Uji Skala Kesukaan (*Hedonic Scale Test*)

Nama Panelis :

Tanggal Uji :

Produk : "Formulasi Hati Ayam Broiler dan Brokoli terhadap Kadar Zat Gizi serta Mutu Organoleptik *Nugget* Tempe untuk Penderita Anemia Remaja Puteri"

Instruksi :

Dihadapkan saudara disajikan *nugget* tempe dengan formulasi Hati Ayam Broiler dan Brokoli untuk Penderita Anemia Remaja Puteri. Saudara diminta untuk memberikan penilaian terhadap rasa, aroma, warna, dan tekstur dengan mengunakan skala sebagai berikut:

1 = Sangat tidak suka

2= Tidak suka

3 = Suka

4= Sangat Suka

Setelah saudara mencicipi salah satu sampel saudara diminta berkumur dengan air minum yang telah disediakan sebelum mencicipi sampel yang lain.Selain itu saudara juga diminta untuk memberikan kritik dan saran.

Kode Sampel	Kriteria Penilaian			
	Rasa	Aroma	Warna	Tekstur
124				
270				
453				
639				

Kritik & Saran :

Terima Kasih Atas Partisipasinya

Lampiran 5. Formulir Penentuan Taraf Perlakuan Terbaik

Formulir Penentuan Taraf Perlakuan Terbaik

Panelis :

Tanggal :

Produk : Formulasi Hati Ayam Broiler dan Brokoli terhadap Kadar Zat Gizi serta Mutu Organoleptik *Nugget* Tempe untuk Penderita Anemia Remaja Puteri"

Saudara diminta untuk mengemukakan pendapat tetang variabel yang terpenting untuk menentukan parameter mutu produk. Dengan cara merangking (mengurutkan) 12 variabel dari tertinggi ke terendah dengan mencantumkan no 1-12. Angka terendah untuk variabel kurang penting dan angka tertinggi untuk variabel yang terpenting. Pemberian nilai boleh sama apabila dirasa variabel yang dinilai sama penting.

Variabel	Rangking
Aroma	
Rasa	
Warna	
Tekstur	
Kadar Air	
Kadar Abu	
Nilai energi	
Kadar Protein	
Kadar Lemak	
Kadar Karbohidrat	
Kadar Zat Besi (Fe)	
Kadar Vitamin C	

Terima Kasih Atas Partisipasinya

Lampiran 6. Rencana Jadwal Kegiatan Penelitian dan Anggaran Dana Penelitian

Tabel Rencana Jadwal Kegiatan Penelitian

Kegiatan	Bulan (2022-2023)									
	Sept	Okt	Nov	Des	Jan	Feb	Mar	Apr	Mei	Juni
Penyusunan Proposal										
Seminar Proposal										
Proses Revisi Dan Pengajuan Etik Penelitian										
Pelaksanaan Penelitian										
Pengolahan Data Dan Analisis Data										
Seminar Laporan Hasil Penelitian										

Tabel Anggaran Dana Penelitian

Uraian	Kebutuhan	Harga Satuan (Rp)	Harga (Rp)
Cetak Proposal	3 Eksemplar	30000	90000
Map Plastik	3 Buah	2500	7500
Hati Ayam Broiler	3 kg	2500	175000
Brokoli	1.5 Kg	3000	22500
Tempe	4 papan besar	13000	52000
Telur Ayam Ras Negeri	1 kg	1500	25000
Tepung Terigu	1.5 kg	3000	9000
Tepung Panir	1.5 kg	6000	30000
Gula	0.5 kg	6000	6000
Bawang Putih	3 Buah	2500	7500
Bawang Merah	¼ kg	6000	6000
Garam	1 bungkus	3000	3000
Lada Bubuk	2 bungkus	1000	2000
Ketumbar Bubuk	2 bungkus	1500	3000

Uji Gizi	12	300000	3600000
Kadar Air			
Kadar Abu			
Protein			
Lemak			
Karbohidrat			
zat Besi			
Vitamin C			
Air Mineral (Aqua 250 Ml)	1 Dus	1500	42000
Mika Kecil	40 buah	250	10000
Total Anggran			**4.090.500**

Lampiran 7. Analisis Kadar Air

Descriptives

air

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	35.1800	.03606	.02082	35.0904	35.2696	35.15	35.22
P2	3	36.9433	.06110	.03528	36.7916	37.0951	36.89	37.01
P3	3	37.3867	.03512	.02028	37.2994	37.4739	37.35	37.42
P4	3	38.6533	.07095	.04096	38.4771	38.8296	38.59	38.73
Total	12	37.0408	1.30030	.37536	36.2147	37.8670	35.15	38.73

ANOVA

air

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.576	3	6.192	2191.846	.000
Within Groups	.023	8	.003		
Total	18.598	11			

air

Duncan

perlakuan	N	Subset for alpha = 0.05			
		1	2	3	4
P1	3	35.1800			
P2	3		36.9433		
P3	3			37.3867	
P4	3				38.6533
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 8. Analisis Kadar Abu

Descriptives

abu

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	1.2167	.03055	.01764	1.1408	1.2926	1.19	1.25
P2	3	1.6567	.06110	.03528	1.5049	1.8084	1.59	1.71
P3	3	1.4800	.03000	.01732	1.4055	1.5545	1.45	1.51
P4	3	1.3100	.03000	.01732	1.2355	1.3845	1.28	1.34
Total	12	1.4158	.17886	.05163	1.3022	1.5295	1.19	1.71

ANOVA

abu

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.339	3	.113	69.888	.000
Within Groups	.013	8	.002		
Total	.352	11			

abu

Duncan

perlakuan	N	Subset for alpha = 0.05			
		1	2	3	4
P1	3	1.2167			
P4	3		1.3100		
P3	3			1.4800	
P2	3				1.6567
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 9. Analisis Kadar Protein

Descriptives

protein

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	21.0233	.06110	.03528	20.8716	21.1751	20.97	21.09
P2	3	26.5233	.03055	.01764	26.4474	26.5992	26.49	26.55
P3	3	25.3933	.03055	.01764	25.3174	25.4692	25.36	25.42
P4	3	24.8800	.13229	.07638	24.5514	25.2086	24.78	25.03
Total	12	24.4550	2.16149	.62397	23.0817	25.8283	20.97	26.55

ANOVA

protein

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51.346	3	17.115	2963.711	.000
Within Groups	.046	8	.006		
Total	51.392	11			

protein

Duncan

perlakuan	N	Subset for alpha = 0.05			
		1	2	3	4
P1	3	21.0233			
P4	3		24.8800		
P3	3			25.3933	
P2	3				26.5233
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 10. Analisis Kadar Lemak

Descriptives

lemak

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	15.0433	.09866	.05696	14.7983	15.2884	14.93	15.11
P2	3	18.4233	.05033	.02906	18.2983	18.5484	18.37	18.47
P3	3	17.1533	.04509	.02603	17.0413	17.2653	17.11	17.20
P4	3	16.4233	.05033	.02906	16.2983	16.5484	16.37	16.47
Total	12	16.7608	1.27845	.36906	15.9485	17.5731	14.93	18.47

ANOVA

lemak

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.945	3	5.982	1421.388	.000
Within Groups	.034	8	.004		
Total	17.979	11			

lemak

Duncan

perlakuan	N	Subset for alpha = 0.05			
		1	2	3	4
P1	3	15.0433			
P4	3		16.4233		
P3	3			17.1533	
P2	3				18.4233
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 11. Analisis Kadar Karbohidrat

Descriptives

karbohidrat

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	27.5367	.07371	.04256	27.3536	27.7198	27.48	27.62
P2	3	16.8000	.06083	.03512	16.6489	16.9511	16.73	16.84
P3	3	18.5867	.01528	.00882	18.5487	18.6246	18.57	18.60
P4	3	18.3867	.16653	.09615	17.9730	18.8004	18.20	18.52
Total	12	20.3275	4.40776	1.27241	17.5269	23.1281	16.73	27.62

ANOVA

karbohidrat

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	213.638	3	71.213	7677.916	.000
Within Groups	.074	8	.009		
Total	213.712	11			

karbohidrat

Duncan

perlakuan	N	Subset for alpha = 0.05			
		1	2	3	4
P2	3	16.8000			
P4	3		18.3867		
P3	3			18.5867	
P1	3				27.5367
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 12. Analisis Energi

Descriptives

energi

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	329.6300	.37041	.21385	328.7099	330.5501	329.21	329.91
P2	3	339.1033	.57143	.32992	337.6838	340.5228	338.45	339.51
P3	3	330.3000	.44441	.25658	329.1960	331.4040	329.95	330.80
P4	3	320.8767	.59341	.34260	319.4026	322.3508	320.25	321.43
Total	12	329.9775	6.74887	1.94823	325.6895	334.2655	320.25	339.51

ANOVA

energi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	498.992	3	166.331	656.547	.000
Within Groups	2.027	8	.253		
Total	501.019	11			

energi

Duncan

perlakuan	N	Subset for alpha = 0.05		
		1	2	3
P4	3	320.8767		
P1	3		329.6300	
P3	3		330.3000	
P2	3			339.1033
Sig.		1.000	.142	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 13. Analisis Kadar Zat Besi

Descriptives

fe

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	2.2200	.01000	.00577	2.1952	2.2448	2.21	2.23
P2	3	4.8200	.11000	.06351	4.5467	5.0933	4.71	4.93
P3	3	4.1933	.08505	.04910	3.9821	4.4046	4.11	4.28
P4	3	3.5933	.13204	.07623	3.2653	3.9213	3.45	3.71
Total	12	3.7067	1.00778	.29092	3.0664	4.3470	2.21	4.93

ANOVA

fe

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.098	3	3.699	401.379	.000
Within Groups	.074	8	.009		
Total	11.172	11			

fe

Duncan

perlakuan	N	Subset for alpha = 0.05			
		1	2	3	4
P1	3	2.2200			
P4	3		3.5933		
P3	3			4.1933	
P2	3				4.8200
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 14. Analisis Vitamin C

Descriptives

vit.c

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
P1	3	.0267	.01155	.00667	-.0020	.0554	.02	.04
P2	3	.5133	.10066	.05812	.2633	.7634	.42	.62
P3	3	1.3933	.08327	.04807	1.1865	1.6002	1.30	1.46
P4	3	2.1133	.10066	.05812	1.8633	2.3634	2.02	2.22
Total	12	1.0117	.84145	.24290	.4770	1.5463	.02	2.22

ANOVA

vit.c

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.734	3	2.578	377.254	.000
Within Groups	.055	8	.007		
Total	7.788	11			

vit.c

Duncan

perlakuan	N	Subset for alpha = 0.05			
		1	2	3	4
P1	3	.0267			
P2	3		.5133		
P3	3			1.3933	
P4	3				2.1133
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 3.000.

Lampiran 15. Analisis Mutu Organoleptik Warna

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
warna	120	3.08	.630	2	4
perlakuan	120	2.50	1.123	1	4

Kruskal-Wallis Test

Ranks

	perlakuan	N	Mean Rank
warna	P1_124	30	59.53
	P2_639	30	40.50
	P3_453	30	62.73
	P4_270	30	79.23
	Total	120	

Test Statistics[a,b]

	warna
Chi-Square	24.499
df	3
Asymp. Sig.	.000

a. Kruskal Wallis Test
b. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
warna	120	3.08	.630	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
warna	P1_124	30	35.47	1064.00
	P2_639	30	25.53	766.00
	Total	60		

Test Statistics[a]

	warna
Mann-Whitney U	301.000
Wilcoxon W	766.000
Z	-2.580
Asymp. Sig. (2-tailed)	.010

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
warna	120	3.08	.630	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
warna	P1_124	30	29.67	890.00
	P3_453	30	31.33	940.00
	Total	60		

Test Statistics[a]

	warna
Mann-Whitney U	425.000
Wilcoxon W	890.000
Z	-.444
Asymp. Sig. (2-tailed)	.657

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
warna	120	3.08	.630	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
warna	P1_124	30	25.40	762.00
	P4_270	30	35.60	1068.00
	Total	60		

Test Statistics[a]

	warna
Mann-Whitney U	297.000
Wilcoxon W	762.000
Z	-2.570
Asymp. Sig. (2-tailed)	.010

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
warna	120	3.08	.630	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
warna	P2_639	30	24.73	742.00
	P3_453	30	36.27	1088.00
	Total	60		

Test Statistics[a]

	warna
Mann-Whitney U	277.000
Wilcoxon W	742.000
Z	-2.991

Asymp. Sig. (2-tailed)	.003

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
warna	120	3.08	.630	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
warna	P2_639	30	21.23	637.00
	P4_270	30	39.77	1193.00
	Total	60		

Test Statistics[a]

	warna
Mann-Whitney U	172.000
Wilcoxon W	637.000
Z	-4.534
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
warna	120	3.08	.630	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
warna	P3_453	30	26.13	784.00
	P4_270	30	34.87	1046.00
	Total	60		

Test Statistics[a]

	warna
Mann-Whitney U	319.000
Wilcoxon W	784.000
Z	-2.209
Asymp. Sig. (2-tailed)	.027

a. Grouping Variable: perlakuan

Lampiran 16. Analisis Mutu Organoleptik Aroma

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
aroma	120	3.13	.681	2	4
perlakuan	120	2.50	1.123	1	4

Kruskal-Wallis Test

Ranks

	perlakuan	N	Mean Rank
aroma	P1_124	30	45.35
	P2_639	30	58.05
	P3_453	30	65.55
	P4_270	30	73.05
	Total	120	

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
aroma	120	3.13	.681	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
aroma	P1_124	30	27.50	825.00
	P2_639	30	33.50	1005.00
	Total	60		

Test Statistics[a]

	aroma
Mann-Whitney U	360.000
Wilcoxon W	825.000
Z	-1.468
Asymp. Sig. (2-tailed)	.142

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
aroma	120	3.13	.681	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
aroma	P1_124	30	25.45	763.50
	P3_453	30	35.55	1066.50
	Total	60		

Test Statistics[a]

	aroma
Mann-Whitney U	298.500

Wilcoxon W	763.500
Z	-2.487
Asymp. Sig. (2-tailed)	.013

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
aroma	120	3.13	.681	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
aroma	P1_124	30	23.40	702.00
	P4_270	30	37.60	1128.00
	Total	60		

Test Statistics[a]

	aroma
Mann-Whitney U	237.000
Wilcoxon W	702.000
Z	-3.533
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
aroma	120	3.13	.681	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
aroma	P2_639	30	28.68	860.50
	P3_453	30	32.32	969.50
	Total	60		

Test Statistics[a]

	aroma
Mann-Whitney U	395.500
Wilcoxon W	860.500
Z	-.877
Asymp. Sig. (2-tailed)	.380

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
aroma	120	3.13	.681	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
aroma	P2_639	30	26.87	806.00
	P4_270	30	34.13	1024.00
	Total	60		

Test Statistics[a]

	aroma
Mann-Whitney U	341.000
Wilcoxon W	806.000
Z	-1.776
Asymp. Sig. (2-tailed)	.076

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
aroma	120	3.13	.681	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
aroma	P3_453	30	28.68	860.50
	P4_270	30	32.32	969.50
	Total	60		

Test Statistics[a]

	aroma
Mann-Whitney U	298.500
Wilcoxon W	763.500
Z	-2.487
Asymp. Sig. (2-tailed)	.013

a. Grouping Variable: perlakuan

Lampiran 17. Analisis Mutu Organoleptik Rasa

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
rasa	120	3.06	.639	2	4
perlakuan	120	2.50	1.123	1	4

Kruskal-Wallis Test

Ranks

	perlakuan	N	Mean Rank
rasa	P1_124	30	51.33
	P2_639	30	48.27
	P3_453	30	72.08
	P4_270	30	70.32
	Total	120	

Test Statistics[a,b]

	rasa
Chi-Square	14.854
df	3
Asymp. Sig.	.002

a. Kruskal Wallis Test
b. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
rasa	120	3.06	.639	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
rasa	P1_124	30	31.37	941.00
	P2_639	30	29.63	889.00
	Total	60		

Test Statistics[a]

	rasa
Mann-Whitney U	424.000
Wilcoxon W	889.000
Z	-.433
Asymp. Sig. (2-tailed)	.665

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
rasa	120	3.06	.639	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
rasa	P1_124	30	25.33	760.00
	P3_453	30	35.67	1070.00
	Total	60		

Test Statistics[a]

	rasa
Mann-Whitney U	295.000
Wilcoxon W	760.000
Z	-2.592
Asymp. Sig. (2-tailed)	.010

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
rasa	120	3.06	.639	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
rasa	P1_124	30	25.63	769.00
	P4_270	30	35.37	1061.00
	Total	60		

Test Statistics[a]

	rasa
Mann-Whitney U	304.000
Wilcoxon W	769.000
Z	-2.522
Asymp. Sig. (2-tailed)	.012

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
rasa	120	3.06	.639	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
rasa	P2_639	30	24.70	741.00
	P3_453	30	36.30	1089.00
	Total	60		

Test Statistics[a]

	rasa
Mann-Whitney U	276.000
Wilcoxon W	741.000
Z	-2.858
Asymp. Sig. (2-tailed)	.004

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
rasa	120	3.06	.639	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
rasa	P2_639	30	24.93	748.00
	P4_270	30	36.07	1082.00
	Total	60		

Test Statistics[a]

	rasa
Mann-Whitney U	283.000
Wilcoxon W	748.000
Z	-2.818
Asymp. Sig. (2-tailed)	.005

a. Grouping Variable: perlakuan

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
rasa	120	3.06	.639	2	4
perlakuan	120	2.50	1.123	1	4

Mann-Whitney Test

Ranks

	perlakuan	N	Mean Rank	Sum of Ranks
rasa	P3_453	30	31.12	933.50
	P4_270	30	29.88	896.50
	Total	60		

Test Statistics[a]

	rasa
Mann-Whitney U	431.500
Wilcoxon W	896.500
Z	-.320
Asymp. Sig. (2-tailed)	.749

a. Grouping Variable: perlakuan

Lampiran 18. Analisis Mutu Organoleptik Tekstur

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
tekstur	120	3.05	.563	2	4
perlakuan	120	2.50	1.123	1	4

Kruskal-Wallis Test

Ranks

	perlakuan	N	Mean Rank
tekstur	P1_124	30	53.00
	P2_639	30	61.37
	P3_453	30	64.73
	P4_270	30	62.90
	Total	120	

Test Statistics[a,b]

	tekstur
Chi-Square	2.975
df	3
Asymp. Sig.	.396

a. Kruskal Wallis Test
b. Grouping Variable: perlakuan

Lampiran 19. Hasil Uji Rangking Taraf Perlakuan Terbaik

variabel	1	2	3	4	5	6	7	8	9	10	jumlah	rata-rata	ranking	BV	BN
aroma	9	7	7	5	2	8	11	6	7	5	67	6.7	6	0.97101	0.08747
rasa	6	10	6	10	7	6	6	10	6	2	69	6.9	4	1	0.09008
warna	10	6	2	4	5	11	10	8	6	6	68	6.8	5	0.98551	0.08877
tekstur	11	4	1	6	8	9	9	7	5	7	67	6.7	6	0.97101	0.08747
kadar air	2	5	10	4	10	2	2	11	4	10	60	6	9	0.86957	0.07833
kadar abu	1	1	9	4	1	1	1	5	3	1	27	2.7	12	0.3913	0.03525
nilai energi	8	3	3	9	3	7	7	3	9	11	63	6.3	8	0.91304	0.08225
kadar protein	6	10	6	10	7	6	6	10	8	2	71	7.1	3	1.02899	0.09269
kadar lemak	3	9	5	8	6	5	5	2	7	3	53	5.3	10	0.76812	0.06919
kadar karbohidrat	4	2	4	8	4	4	4	1	7	4	42	4.2	11	0.6087	0.05483
kadar zat besi (Fe)	7	12	12	12	12	10	8	9	11	9	102	10.2	1	1.47826	0.13316
kadar vitamin C	5	11	11	11	11	3	3	4	10	8	77	7.7	2	1.11594	0.10052
														11.1014	

		P1		P2		P3		P4	
variabel	BN	NE	NH	NE	NH	NE	NH	NE	NH
aroma	0.0875	0	0	0.45	0.03938	0.71667	0.06271	1	0.0875
rasa	0.0901	0.13333	0.01201	0	0	1	0.0901	0.94	0.08469
warna	0.0888	0.49583	0.04403	0	0	0.575	0.05106	1	0.0888
tekstur	0.0875	0	0	0.73913	0.06467	1	0.0875	0.86957	0.07609
kadar air	0.0783	0	0	0.5072	0.03971	0.63401	0.04964	1	0.0783
kadar abu	0.0352	0	0	1	0.0352	0.61364	0.0216	0.22727	0.008
nilai energi	0.0822	0.48053	0.0395	1	0.0822	0.51728	0.04252	0	0

kadar protein	0.0927	0	0	1	0.0927	0.79455	0.07365	0.70182	0.06506
kadar lemak	0.0692	0	0	1	0.0692	0.62426	0.0432	0.40828	0.02825
kadar karbohidrat	0.0548	1	0.0548	0	0	0.13793	0.00756	0.14725	0.00807
kadar zat besi (Fe)	0.1332	0	0	1	0.1332	0.75769	0.10092	0.52692	0.07019
kadar vitamin C	0.1005	0	0	0.23335	0.02345	0.65501	0.06583	1	0.1005
JUMLAH			0.15034		0.57971		0.6963		0.69545

Lampiran 20. Hasil Uji Laboratorium

LABORATORIUM GIZI
DEPARTEMEN GIZI KESEHATAN
FAKULTAS KESEHATAN MASYARAKAT
UNIVERSITAS AIRLANGGA
SURABAYA

Kampus C, Jl. Mulyorejo Surabaya, 60115
Telp. 0315964808

No. Sampel : 106/Lab. Gizi/2023
Nama Sampel : Nugget Tempe (Subtitusi hati ayam broiler dan brokoli hijau)
Pengirim : Sofie Aula N
Alamat : Prodi Sarjana Terapan Gizi Poltekkes Kemenkes Malang
Tanggal diterima : 12 Mei 2023
Tanggal selesai : 19 Mei 2023

Hasil

Kode Sampel	Karbohidrat (%)	Protein (%)	Lemak (%)	Air (%)	Abu (%)	Fe (mg/100g)	Vit C (mg/100g)
124	27,62	21,09	14,93	35,15	1,21	2,214	0,04
146	27,51	20,97	15,11	35,22	1,19	2,225	0,02
174	27,48	21,01	15,09	35,17	1,25	2,231	0,02
270	18,83	24,78	16,47	38,64	1,28	3,455	2,02
360	18,53	25,03	16,37	38,73	1,34	3,629	2,10
419	18,94	24,83	16,43	38,59	1,31	3,716	2,22
453	18,57	25,42	17,11	37,42	1,48	4198	1,30
489	18,59	25,36	17,15	37,39	1,51	4,283	1,42
530	18,60	25,40	17,20	37,35	1,45	4,112	1,46
639	16,52	26,49	18,47	36,93	1,59	4,710	0,42
765	16,40	26,55	18,37	37,01	1,67	4,931	0,62
877	16,44	26,53	18,43	36,89	1,71	4,820	0,50

Surabaya, 19 Mei 2023
Teknisi,

Evy Arfianti, S.KM, M.Kes.
NIP. 197303282000032005

Lampiran 21. Surat melakukan penelitian di Laboratorium IBM/ITP dan UCR Poltekkes Malang

KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
DIREKTORAT JENDERAL TENAGA KESEHATAN
POLITEKNIK KESEHATAN KEMENKES MALANG
Jl. Besar Ijen No. 77 C, 65112 Telp (0341) 566075, 571388 Fax (0341) 556746
Website : http://www.poltekkes-malang.ac.id Email : direktorat@poltekkes-malang.ac.id

SURAT KETERANGAN TELAH MELAKUKAN PENELITIAN

Nomor : 8/V/2023/Penelitian/IBM

Yang bertandatangan di bawah ini, Penanggungjawab Laboratorium Jurusan Gizi menerangkan bahwa :

Nama	: Sofie Aula Nurhidayati
NIM	: P17111193065
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Benar-benar telah melakukan penelitian di Laboratorium IBM/ITP dan Uji Cita Rasa pada hari Selasa tanggal 9 Mei 2023 guna penyusunan Skripsi dengan judul "Substitusi Hati Ayam Broiler dan Brokoli Hijau pada Nugget Tempe terhadap Mutu Gizi serta Mutu Organoleptik untuk Pencegahan Anemia Remaja Putri".

Surat keterangan ini dibuat agar dapat dipergunakan sebagaimana mestinya.

Mengetahui,
Penanggungjawab Lab Jurusan Gizi

Dr. Nur Rahman, S.TP., MP
NIP 196509131989031003

Malang, 25 Mei 2023
PLP Lab IBM/ITP

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